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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| BRAIN LESIONS ASSOCIATED WITH EXPERIMENTAL "EPILEPTIFORM" SEIZURES IN THE MONKEY. <i>S. Eugene Barrera, Lenore M. Kopeloff and Nicholas Kopeloff</i> .....                                                                                                                                                                                                                                                                                                                                                                                            | 727 |
| THE ELECTROENCEPHALOGRAM IN POSTTRAUMATIC EPILEPSY. <i>Frederic A. Gibbs, Walter R. Wegner and Erna L. Gibbs</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                | 738 |
| POSTTRAUMATIC EPILEPSY. <i>Wilder Penfield</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 750 |
| EXPERIMENT IN POSTGRADUATE EDUCATION. <i>Charles A. Rymer and Franklin G. Ebaugh</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 752 |
| HISTORICAL SIDELIGHTS ON THE PROBLEM OF DELINQUENCY. <i>Gregory Zilboorg</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 757 |
| A PSYCHIATRIC STUDY OF 250 SEX OFFENDERS. <i>Benjamin Apfelberg, Carl Sugar and Arnold Z. Pfeffer</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                           | 762 |
| A COMPARATIVE STATISTICAL STUDY OF MALE AND FEMALE DRUG ADDICTS. <i>M. J. Pescor</i> ...                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 771 |
| NEUROLOGY AND PSYCHIATRY IN PALESTINE. <i>L. Halpern</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 775 |
| MANIC PSYCHOSIS IN A NEGRO. <i>E. J. Wiggins and R. S. Lyman</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 781 |
| THE MEASUREMENT OF REMEMBERING. <i>Fred Feldman and D. Ewen Cameron</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 788 |
| FOUR YEARS' EXPERIENCE WITH MUSIC AS A THERAPEUTIC AGENT AT ELOISE HOSPITAL. <i>Ira M. Altshuler</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                            | 792 |
| ETIOLOGY OF MENTAL DISEASE, A CHANGING CONCEPT. <i>George S. Sprague</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 795 |
| A FOLLOW-UP STUDY OF PAROLES FROM CALIFORNIA STATE MENTAL HOSPITALS. <i>Marian R. Ballin</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 799 |
| AMPHETAMINE SULFATE IN ABORTING THE ACUTE ALCOHOLIC CYCLE. <i>Michael M. Miller</i> ...                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 800 |
| SCHIZOPHRENIA IN A FOUR YEAR OLD BOY. <i>H. Robert Blank, Olive Cushing Smith and Hilde Bruch</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                               | 805 |
| A STUDY OF PRODROMAL FACTORS IN MENTAL ILLNESS WITH SPECIAL REFERENCE TO SCHIZOPHRENIA. <i>Mary Phyllis Wittman and D. Louis Steinberg</i> .....                                                                                                                                                                                                                                                                                                                                                                                                      | 811 |
| NEUROPSYCHIATRY IN A GENERAL HOSPITAL. <i>Thomas J. Heldt</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 817 |
| RAPID CHANGES IN THE O <sub>2</sub> TENSION OF CEREBRAL CORTEX DURING INDUCED CONVULSIONS. <i>E. W. Davis, W. S. McCulloch and E. Roseman</i> .....                                                                                                                                                                                                                                                                                                                                                                                                   | 825 |
| CLINICAL AND EEG. STUDIES IN OBSESSIVE-COMPULSIVE STATES. <i>B. L. Pacella, P. Polatin and S. H. Nagler</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                     | 830 |
| CORRESPONDENCE .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 839 |
| COMMENT:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |
| Developments in Psychiatry in Great Britain, 841. Doctor Pollock and Mental Hygiene, 843. Yale Plan Clinics for Inebriates, 844.                                                                                                                                                                                                                                                                                                                                                                                                                      |     |
| NEWS AND NOTES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |
| Dr. Barrera Heads Department of Psychiatry and Neurology at Albany, 846. Symposium of Juvenile Delinquency, 846. Sterilization in California, 846. Rockefeller Foundation Appropriations in 1943, 847. The Commonwealth Fund and Mental Health, 847. The A. Cressy Morrison Prize Contest for 1944, 847. National Foundation for Juvenile Paralysis, 848. Socialized Medicine, 848. The Thomas W. Salmon Lectures, 1944, 848. ETC. A Review of General Semantics, 848. Fund for Psychosomatic Research, 849. American Review of Soviet Medicine, 849. |     |
| BOOK REVIEWS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |
| Nervousness, Indigestion and Pain. <i>Walter C. Alvares</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 850 |
| The Human Hand. <i>Charlotte Wolff</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 850 |
| Principles of Psychiatric Nursing. <i>Madeline Elliott Ingram</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 850 |
| The Freedom to be Free. <i>James Marshall</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 851 |
| The Therapy of the Neuroses and Psychoses. <i>Samuel Herman Kraines</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 851 |
| Psychology in Nursing Practice. <i>Philip Lawrence Harriman, Leta L. Greenwood and Charles E. Skinner</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                       | 852 |
| The 1943 Year Book of Neurology, Psychiatry and Endocrinology. <i>Hans H. Reese, Nolan D. C. Lewis and Elmer L. Sevringhaus, Editors</i> .....                                                                                                                                                                                                                                                                                                                                                                                                        | 852 |
| A Psychiatric Word Book. <i>Richard H. Hutchings</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 852 |
| IN MEMORIAM:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |
| Bernard Sachs. <i>Foster Kennedy</i> .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 853 |
| ANNUAL INDEX: SUBJECT INDEX .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 855 |
| AUTHORS INDEX .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 867 |



## BRAIN LESIONS ASSOCIATED WITH EXPERIMENTAL "EPILEPTIFORM" SEIZURES IN THE MONKEY<sup>1</sup>

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This study is concerned with the histologic features of meningeocortical lesions produced experimentally in the *Macacus rhesus*. Although a uniform surgical procedure was employed in all cases, only certain of the preparations used were associated with the occurrence of convulsive seizures. These clinical manifestations followed a single application of selective materials to the surface of the precentral cerebral cortex (1). A histologic analysis of the brain lesions produced in a large series of monkeys is presented here in an attempt to determine what if any relationship exists between tissue changes and the occurrence of convulsions.

### PREVIOUS WORK

The reports most pertinent to the present study have dealt with the histologic findings in cases of focal tissue changes in human brains, associated with clinical epilepsy. These have included cases with meningitis, as well as cerebral cicatrix resulting from cranio-cerebral trauma, or corticomeningeal changes associated with some other form of focal pathology, such as inflammation, abscess, tumor, etc. The fundamental studies of Foerster and Penfield (2) dealt with meningocerebral cicatrix in cases of chronic epilepsy. These authors concluded that "laceration of the brain results in downward growth of connective tissue from the dura with a rich plexus of vessels which intermingles with astrocytes, the fibers of which tend to be oriented upward to the surface."

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Section on Convulsive Disorders, Detroit, Michigan, May 10-13, 1943.

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Actual traction as a result of the scar was hypothesized, with a possible displacement of the cerebral structures and ventricles toward the scar. In such scar areas ganglion cells were usually absent. Nerve fibers were rare. Evidence of progressive tissue destruction was observed, as shown by alteration of microglia and the presence of compound granular corpuscles about individual vessels. It was suggested that intermittent closure of such vessels at points of tissue destruction might be associated with the rapidly changing vascular bed at the periphery of the scar, which might serve as a sufficient "stimulus" to initiate a seizure. More recently, Penfield and Humphreys (3) studied 95 specimens of cortical tissue excised at operation in an attempt to cure patients of epileptic seizures. These included lesions associated with traumatic injury, healed brain abscess, meningitis, arterial occlusion and temporary ischemia. Post-operative freedom from seizures or alteration of the seizure pattern, encephalogram, inspection of the brain, and electrical stimulation under local anesthesia, all justified the conclusion that the tissue removed was the originating focus of the seizures. The pathologic findings varied depending upon the gross nature of the process, but in general certain features were noted. A central area, essentially devoid of nerve cells and fibers, contained a network of fibroid glia and connective tissue, and a marked reduction in the number of capillaries and precapillaries. The intermediate zone showed either small groups of nerve cells or a reduced number of fibers, and a diminished number of capillaries. In addition, there were always small perivascular patches in which were observed acute swelling of oligodendrocytes and clasmotodendrosis of astrocytes, as well as compound granular corpuscles containing fat. These were considered as evidence of a process of progressive cell death and myelin destruction. They

were found even in cases of long standing. The arteries of the scar were also found to contain more fibers in their nerve plexuses than vessels within normal convolutions. It was felt that stimuli of some sort arising in the zone as a result of the progressive destructive process might in some way form the basis for the initiation of a seizure.

However, there still remained the problem of determining whether similar findings could be observed in scars not associated with convulsive manifestations. In a more recent communication, Penfield and Bridges(4) extended the previous study to include such material. Three cases of post-traumatic non-epileptogenic meningocerebral cicatrix resulting from depressed fracture of the skull, occurring 2, 7, and 40 years prior to autopsy, were studied. No clinical evidence of epilepsy was present in any case and death was not related to the earlier injury. Evidence of progressive tissue destruction in the form of scattered fat-filled compound granular corpuscles, essentially perivascular in distribution, was found in each case. This finding raised the question as to the significance of such processes in the initiation of the convulsive attack.

Previously, it has not been possible to study "epileptogenic" lesions in animals since a chronic state of convulsive reactivity by local treatment of the brain had not been produced experimentally. Although a number of means have been effective in initiating single attacks: injection of various drugs and other substances, alteration of the nutritional state, as well as electrical stimulation or freezing of the cerebral cortex, multiple seizures have been induced only by repetition of the inciting agent.

In the course of the present study it was found possible to produce acute, intermittent and recurrent convulsive seizures in animals, particularly the monkey, by a single local application to the cerebral cortex of a variety of substances. In some instances no convulsions occurred despite the presence of a definite meningocortical lesion. This communication is concerned with an histologic analysis of the above material.

#### MATERIALS AND METHODS

A description of the materials used for application to the cortex and the various

clinical effects associated with each application have been reported in detail(1). Several different types of substances were employed: some on the basis of their immunologic nature, some for their physico-chemical properties, and others for control purposes. Since special discs were used for the application of the test materials, empty discs were employed in two instances to control the mechanical and surgical factors involved.

The surgical procedure was carried out under ether anesthesia. A trephine hole was enlarged by rongeurs over the motor area to be treated. A linear incision, opening the subarachnoid space, was then made through the dura, and the disc containing the test material carefully slipped through the opening so that it lay against the surface of a predetermined portion of the precentral cortex. The dural opening was then sutured with black silk and the skin wound closed with Michel suture clips. The dimensions of the laminated linen or fiber discs used were as follows: outside diameter 16 mm., inside diameter 13 mm., height 2.5 mm., inside depth 1.5 mm., and capacity 0.2 ml.

Following operation all animals were carefully observed clinically for the occurrence of tremors, myoclonus or convulsive seizures. Individual seizures occurred spontaneously, or were elicited by external stimulation, which was applied in most cases at weekly intervals. In some cases attacks have recurred for more than two years. Occasional examinations were made of the reflexes, and for paralysis or paresis, and in many cases electroencephalograms were recorded at predetermined intervals in order to obtain electrophysiologic correlates of the development of an active focus. In some animals, once a definite individual pattern of recurrent seizures had been established, electroshock, of the type used in clinical neuropsychiatric therapy, was applied to the study of the artificially induced seizures. At times topographic recordings of muscular activity were made. These findings have been reported elsewhere(5). Following a sufficient period of clinical and laboratory investigation most of the animals were sacrificed by intravenous air injection. This method of sacrifice was selected since it produces a minimum of pathologic artifacts. The brain was removed quickly, and usually included a portion of the dura overlying the disc. The disc thus remained temporarily in place until the gross lesion had been carefully observed and blocks cut. Initial formalin-fixation was employed, which was subsequently followed by special fixatives for special stains. The staining methods generally utilized included: hematoxylin-eosin for general topography, Nissl or Bielschowsky-Plien for nerve cells, Spielmeyer or Weigert for myelin sheaths, Sudan III for fat, Cajal gold sublimate for astrocytes, Hortega silver carbonate for oligodendroglia and microglia, and in some cases the Eros stain for blood vessels.

## CLINICAL

Although a variety of test substances were applied to the brain, the clinical responses could be grouped into four principal types: (I) Those in which, within a short time (2-3 days) following application of the substance to the cortex, the animals developed severe, practically continuous convulsions which rapidly became generalized and led to death within a few days. Animals in this group had been sensitized previously to the substance applied to the cortex. Pathologically the site of application presented a severe hemorrhagic encephalopathy with softening, as seen in the Arthus reaction in the brain. (II) A group in which atypical seizures, related topographically to the area of the brain to which the test substance had been applied, occurred soon after operation, lasted for a short period of perhaps a few days, and then ceased. Associated with the application of heavy metal preparations to the cortex and the atypical seizures just described was a varying degree of paralysis of the affected limbs. The pathologic picture was essentially that of an acute softening under the area of application with destruction of the entire cortex of the region. (III) A group in which the application of the test substance was followed by a symptom-free period of 3 to 8 weeks, and then by the onset of convulsive seizures usually Jacksonian in type and topographically related to the lesion. These often became recurrent and generalized in type, and persisted for many months. This is the group strikingly comparable to the cases of epilepsy in human beings associated with "epileptogenic" lesions of the cortex and its coverings. Pathologically these monkeys presented lesions characteristic of a meningocortical cicatrix. This group was considered the most important of the groups studied. It was hoped that it might furnish a neuropathologic basis for the occurrence of seizures. (IV) A group in which, despite the application of the discs with test substances or the empty discs to the cortex, no clinical neurological disabilities or seizures appeared at any time until the death of the animal months after operation. This constituted a control group. In this group the histologic findings were basically the same in type as those found in group III.

## HISTOPATHOLOGIC FINDINGS

Considerable variation in pathology was to be expected in a large series of animals, even though a uniform surgical procedure was employed. In some monkeys at operation a relatively large space was found between cortex and dura with very little cortical bleeding on manipulation, while in others, where the dura was rather tense and close to the brain, bleeding occurred readily. Moreover, slight variations in the position of the disc from case to case might have resulted in varying degrees of pressure on the large superficial vessels of the cortex. Representative animals of each group will be presented in detail.

*Group I—Monkey 274.*—This animal was sensitized to egg-white prior to operation. A disc containing egg-white mixed with gelatin (1:10) precipitated by alumina cream was placed over the left motor area, and as a control a disc containing gelatin alone precipitated by alumina cream, over the right motor area. Three days later, upon frightening the animal, there appeared clonic movements of the arm contralateral to the egg-white site, and immediately thereafter a series of generalized seizures. These continued intermittently for two days and were followed by death the next day.

Grossly, the brain revealed on the left a large area of softening which was hemorrhagic in type and which extended slightly beyond the surface limits of the disc. The softening extended through the cortex and into the outer portion of the underlying white matter.

Microscopically, the diagnosis of a hemorrhagic encephalopathy was confirmed. The process was acute, showed numerous hemorrhagic areas containing fresh blood, and extended through the cortex into the outer white matter. The cortex was practically obliterated from the center of the lesion. In some areas large accumulations of white cells, particularly polymorphonuclears were present, some of which were in process of disintegration. Severe degenerative changes of the blood-vessel walls, with no evidence of proliferation, were seen in the entire region. Toward the periphery of the lesion the process, although similar in type, was less marked and gradually faded out into the normal cortical tissue.

Nerve cell stains revealed no nerve cells near the center of the lesion. Toward the periphery, however, a few nerve cells remained, most of which showed evidence of acute cell disease with swelling, eccentricity of the nucleus, satellitosis, and disappearance of Nissl substance. Nerve cell degeneration extended for a considerable distance into the relatively normal cortical tissue surrounding the lesion. Myelin sheath stains revealed rather severe degenerative changes in the myelin sheaths of the outer white matter underlying the disc. In



the center of the lesion most of the glia cells had disappeared, and of those which remained, glial stains showed marked degenerative changes in the astrocytes, oligodendroglia and microglia. However, numerous fat-filled compound granular corpuscles were present. The astrocytes when detectable showed enlargement and clasmotodendrosis. The microglia likewise appeared larger and fragmented. Oligodendroglia, when present, showed marked acute swelling. These changes in the glia were most pronounced in the region immediately surrounding the area of complete destruction. As the more normal tissue was approached numerous astrocytes in various stages of degeneration were seen, while swelling of the oligodendroglia was everywhere present. The latter, however, may have been due to the ante-mortem condition of the animal. Fat could be stained in the region of acute destruction, free in the tissues as well as in numerous compound granular corpuscles. The entire picture could well be classified as an acute destructive process, or an acute hemorrhagic encephalopathy, confirming the diagnosis of an Arthus phenomenon. This was consistent with the result to be expected from an application of specific antigen to a local site in an animal previously sensitized to the same protein. Other sensitized monkeys treated similarly reacted in the same manner, with acute, severe onset and early death.

The process in the cortex of the opposite hemisphere (control preparation) was not that of a hemorrhagic encephalopathy, but rather of a slight, incipient, reactive, progressive type, characteristic of the response to an "irritative" foreign body applied to the surface of the cortex.

*Group II—Monkey 396.*—A disc containing silver oxide was placed upon the left motor cortex. The day following operation clonic movements of the right arm were observed. Spasms involving the right arm, face and leg continued for 48 hours. During the following 4 months right-sided paresis was constant and only 3 transitory attacks were noted. The animal was then sacrificed for study.

Grossly, the brain revealed a localized area of marked softening under the disc. The entire cortex underlying the disc had been destroyed, with the disc itself penetrating into the cortex almost to the white matter. Unlike the changes described in Group I, the softening in this case did not appear hemorrhagic, but rather, ischemic. The lesion extended through the entire thickness of the cortex well into the underlying white matter. The edges of the lesion were not well defined and the softening blended laterally into the more normal cortex.

Microscopically, the picture resembled that described in Group I, except that the process was not hemorrhagic. The acute destructive changes previously noted in the blood vessels were not marked, nor were the numerous areas containing red blood cells, nor the large groups of polymorphonuclear leucocytes present. None of the nerve cells of the little remaining cortex underlying the disc persisted. At the edges of the lesion some nerve cells were present, but were clearly seen to be undergoing acute degenerative changes, such as described

in Group I. Glia were practically absent from the center of the lesion, but at the periphery the astrocytes and microglia could be seen to be undergoing both initial proliferative and acute destructive changes. The oligodendroglia revealed acute swelling throughout the entire cortex in this, as well as in the untreated hemisphere. Compound granular corpuscles laden with fat were found in large numbers both in the depths of the softening and around its periphery. These did not appear to bear any particular relationship to the blood vessels. Myelin sheath stains revealed marked destruction of myelin and fatty degeneration underlying the disc.

In this case the essential feature was an acute softening involving the total area of cortex under the disc, with only the beginnings of a reactive proliferative process around the edges. This type of acute destructive process was found in those cases in which silver oxide and cupric hydroxide had been applied to the cortex. The severity of the process probably accounted for the fact that, in those animals which survived the initial period of acute convulsions, the ensuing paresis or paralysis of the limbs was functionally related to the destroyed cortex, which prevented further seizures. One might consider the acute seizures following operation as being due to an "irritative" destructive process, which later leads to complete destruction of the nerve cells with consequent paresis. Here again one is not dealing with the typical epileptogenic lesions found in our series to be associated with the chronic recurrent seizures such as will be described below.

*Group III A—Monkey 350 (Chronic seizures).*—A disc containing alumina cream was placed over the motor area of each hemisphere. Twenty-five days later clonic seizures in both arms were observed at frequent intervals over a period of one week. The animal remained symptom-free for 2 weeks. Then typical generalized seizures were elicited at will about once a week for 5 months. Although 5 attempts were made during the following 2 weeks, only one generalized seizure occurred following stimulation. During the next 6 weeks clonic seizures were restricted to the left side. Three weeks later a generalized seizure was observed. On the day following, only a left-sided seizure could be elicited. Three weeks later the animal went into *status epilepticus* (generalized), became moribund and was sacrificed.

Grossly, the right side presented a rather large cavity on the surface of the motor cortex, which however had not destroyed the essential landmarks. The sulcus was still visible. The cavity appeared to have been formed by pressure rather than erosion. The cortex proper under the indentation was somewhat thinned out. The capsule surrounding the disc could be followed in its entirety around the base of the indentation and over the surface of the disc, which was then easily slipped out from its containing sac (Fig. 1).

Microscopically, as seen by the hematoxylin-eosin stain, the capsule was clearly defined. There was some destruction of the outer portion of the



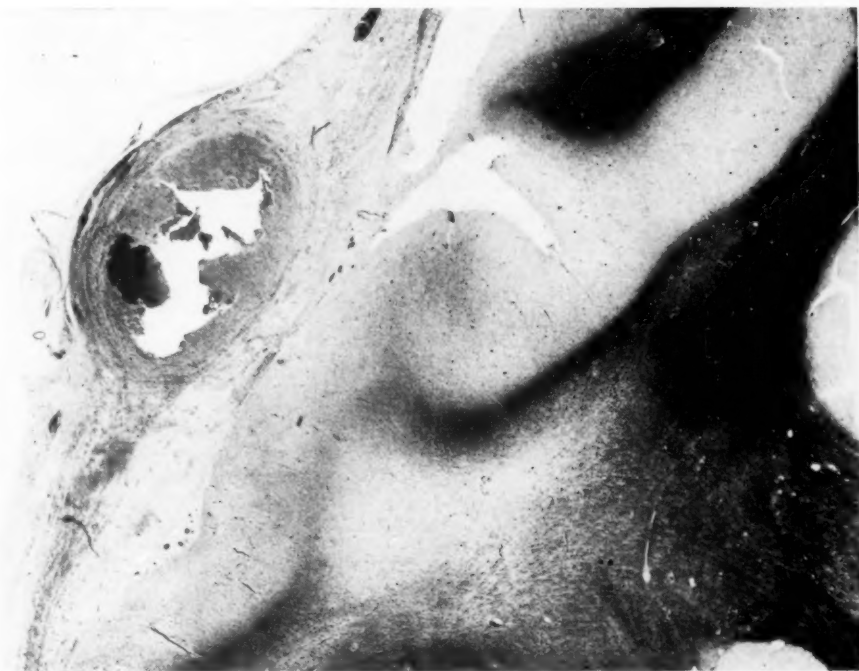


FIG. 2.—Section of left motor cortex of Monkey 350, showing capsule formed by the disc and its attachment to the cortex. The underlying cortex is thinned out and the myelin sheaths of the adjacent white matter show considerable degeneration. Spielmeier myelin sheath stain. (5X)

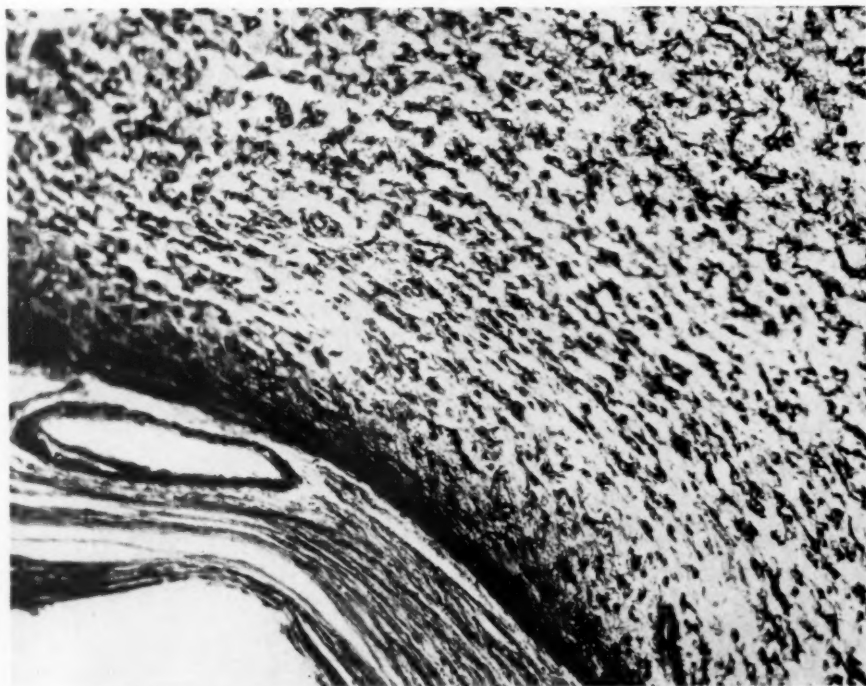


FIG. 1.—Section of right motor cortex of Monkey 350 treated with alumina cream. Cajal gold sublimate stain, showing glial reaction below rim of cavity produced by disc. Long axes of astrocytes tend to lie parallel to base of indentation and are oriented toward the point of attachment of capsule to cortex. (150X)

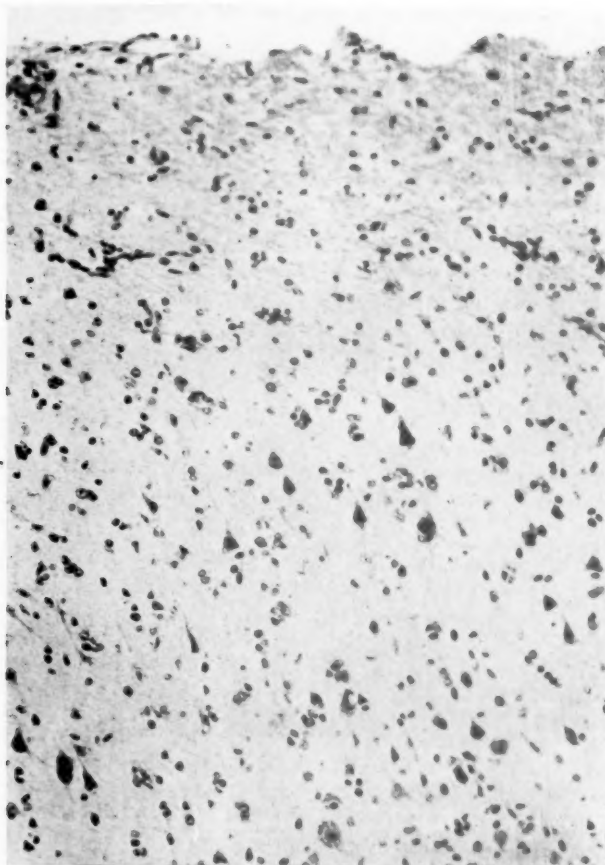


FIG. 3.—Preparation from right motor cortex of Monkey 388 (control case) treated with aquaphor. The nerve cells in the cortex underlying the disc are diminished in number. Acellular areas and areas of shrunken cells are present. Many remaining cells, however, appear entirely normal. Nissl nerve cell preparation. (150 X)



FIG. 4.—Section of right motor cortex underlying disc in Monkey 388, showing astrocytic proliferation under the base of the disc; also one of the small areas of softening where glial reaction is most marked. Cajal gold sublimate preparation. (150 X)

cortex particularly near the edges of the indentation where the capsule was attached. At these points the essential structure of the cortex was destroyed, with some loss of tissue continuity, marked increase in glial nuclei, and disappearance of many of the nerve cells. There was also an increase in the number of small blood vessels. A similar process, milder in degree, was seen under the entire base of the disc. The astrocyte stain showed a marked gliosis underlying the disc, which was particularly severe in the area of greatest cortical destruction near the outer edge. The astrocytes, essentially of the fibrous type, extended beyond the rim of the cavity formed by the disc. The entire section revealed a slight but definite increase in the number of astrocytes. Silver stains of the same section showed an increase in the number of microglia, with some large elongated forms, and numerous compound granular corpuscles. Nerve cell stains revealed a diminution in the number of nerve cells in the outer layers of the cortex, especially in the regions of destruction and marked gliosis. The nerve cells present in such areas were shrunken and poorly stained, to a greater degree than those found in the deeper layers of the cortex underlying the disc, where many appeared normal. In the regions beyond the cavity the nerve cells appeared normal. Myelin sheath stains revealed some paling of the white matter in the outer portion of the convolution immediately underlying the disc, involving both the arcuate and underlying fibers. The loss, however, was less severe than that observed on the left side. Blood vessel stains (Eros method) revealed large blood channels in the area underlying the disc. The blood vessels in this region appeared fewer in number and were larger and straighter than normal. Outside the area underlying the disc the blood vessels approached the normal in both type and distribution. Sudan III preparations showed an accumulation of fat particles in the outer portion of the white matter of the convolution underlying the disc, as well as in the outer layers of the cortex below the base of the disc.

The findings on the right may be summarized as follows: The disc inserted between the dura and the pia became encapsulated. Around the outer edge of the disc there was a severe reaction involving the pia and the underlying cortex. There was also evidence of a pressure effect. The picture was that of a meningocortical cicatrix, accompanied by destruction in the outer layers of the cortex and secondary changes in the underlying white matter.

Grossly, the left cortex appeared more necrotic than the right. The markings of the convolutions under the disc had disappeared. The cavity did not appear the same as on the opposite side. It was more dense and contained much loose necrotic material, as contrasted with the "clean" cavity of the right side.

Microscopically, the hematoxylin-eosin stain revealed a considerable amount of debris, fibrin and cellular exudate. There was a well-formed capsule, the under surface of which was firmly adher-

ent to the outer cortex. A firm network of fibrous strands extended for a considerable distance into the cortex. Portions of the outer layers of the cortex appeared moth-eaten and thinned out, with large vascular channels, some thickening of the blood vessel walls, destruction of the normal continuity of the tissue, accompanied by a glial nuclear reaction. The increase in the number of these nuclei extended deeply into the tissue. Nerve cell stains revealed again a considerable diminution in the number of normal nerve cells underlying the disc, especially in the outer layers of the cortex. In certain areas nerve cells could still be seen undergoing pathologic changes. The loss of cells was most marked near the periphery of the disc where the glial reaction was most intense. In the deeper layers of the cortex underlying the disc, the nerve cells were fairly well preserved. Outside the area underlying the disc the nerve cells appeared normal. Gold stains revealed a marked fibrous gliosis in the cortex underlying the disc in the areas of greatest destruction. There was also evidence of increased glial reaction in the cortex outside this area. Silver stains revealed again a marked increase in the number of large, elongated microglia. The oligodendroglia appeared essentially normal. Fat stains indicated accumulation of fat in the outer layers of the cortex and in the outer portion of the white matter of the convolution underlying the disc. Much of this fat was contained in scavenger cells. Myelin sheath stains showed a diminution in the myelin content of the convolution underlying the pathologic process (Fig. 2). Blood vessel stains again revealed large, straight vessels in the involved area, with a gradual return to the normal pattern outside the periphery of the indentation.

In summary, the findings on this side represent a destructive reactive process involving the meninges and cortex under the treated area. The reaction was that of a marked gliosis with loss of nerve cells in the cortex, with more evidence of necrosis than on the right side previously described. It is interesting to note that the clinical symptoms observed were more severe on the side of the body contralateral to the cortex showing less destruction.

*Group III A—Monkey 353 (Acute seizures).—*The preparation of this animal was the same as that described for Monkey 350. One month after operation clonic seizures were observed in the right hand and face. These continued intermittently for 3 days when the animal became paralyzed on the right side and was sacrificed.

Grossly, the left cortex under the region of the disc appeared fairly well preserved and the cortical markings could be seen. The cortex as a whole, in this region, was indented by the disc, but did not appear to be undergoing any gross destruction. The right cortex, under the region of the disc, appeared more abnormal than the left. The markings, although visible, were not so clear and appeared somewhat obliterated. In places there was some question as to whether or not softening had occurred.



Microscopically, in the left cortex the indentation noted above could be clearly seen in the sections. With the nerve cell stain the cortex as a whole was found to be well-preserved and merely pushed inward. The gray matter was not narrower in this region than in the more normal cortex. The cells in general were fairly well retained under the base of the indentation. However, in certain places the nerve cells seemed to have disappeared. Many of the cells in the involved region appeared to be rather pale as compared with those in the normal cortex. This was especially true in the upper levels. Some of these nerve cells had lost their characteristic dark-staining cytoplasm and well-defined nucleus. The cytoplasmic granules seemed to have disappeared and the nucleus was difficult to distinguish. Vacuoles were present in some of the cells, while others appeared merely as pale shadows. At the circumference of the indentation the nerve cells in general assumed a position in which the long axis ran parallel to the circumference of the hollow. In the surrounding normal tissue the cells were more deeply stained and presented a more normal character. The blood vessels of the cortex under the disc appeared to be somewhat increased both in size and number, especially those in the superficial layers. The vessels extending beyond the periphery of the indentation rapidly approached the normal. At the edge of the indentation the meninges surrounding the disc were firmly attached to the cortex.

Glial stains revealed a definite proliferation of astrocytes in the region underlying the disc where the meningocortical cicatrix was most definite. There was also some evidence of an increase of astrocytes in the underlying white matter. The Hortega silver preparation of the same region indicated a considerable increase in the microglial elements. Some of these cells showed definite progressive changes while others were simply hypertrophied. Compound granular corpuscles were occasionally seen surrounding some of the blood vessels near the periphery of the cortex underlying the disc. The oligodendroglia showed little, if any, pathologic change. Myelin sheath preparations revealed no disappearance of myelin in the white matter underlying the involved cortex.

In the right cortex the markings were as well preserved as in the left cortex. The same general nerve cell picture was present, and although there was some diminution in the number of cells in the cortex underlying the disc the cells were better stained than those in similar areas on the left. The cells showing the greatest degree of pathologic change were found in the most superficial layers of the involved cortex. The blood vessels appeared similar to those on the left but were not as greatly increased in number nor as enlarged. The astrocytic proliferation was somewhat less marked than on the left. The microglia, oligodendroglia, compound granular corpuscles, and myelin were essentially the same on the right as on the left.

In summary, there is evidence here of a bilateral process, the same in type and in degree on both sides, although slightly more severe on the left.

The process is essentially that of a meningocortical cicatrix, of a chronic, progressive, reactive type as shown by the proliferation of glia, the increase in number of blood vessels, and the presence of occasional compound granular corpuscles. It is associated with secondary changes of a chronic type in some of the nerve cells.

*Group III B—Monkey 389 (Recurrent seizures).*

—A disc containing a specific antigen-antibody precipitate (egg-white plus rabbit anti-egg-white serum) mixed with killed human tubercle bacilli and aquaphor<sup>3</sup> was placed over the motor area. One month later, transitory tremors in the left arm were occasionally noted and 3 months after operation typical unilateral clonic seizures occurred for 9 weeks. Following a refractory period of 2 months, generalized seizures originating on the ipsilateral side were observed. Another refractory period of one month ensued. Then generalized seizures or alternate right- or left-sided seizures occurred for 2 months, after which the animal was sacrificed (9 months after operation).

Grossly, there was a large cavity present, which extended through the entire thickness of the cortex and well into the underlying white matter. The cavity had destroyed the cortical markings.

Microscopically, with the hematoxylin-eosin stain, the cavity was shown to be filled with a considerable amount of exudate, which was also present in the perivascular spaces surrounding the cavity. The exudate was rather dense, consisting mainly of small as well as some large mononuclear cells. There was only an occasional polymorphonuclear cell. Some giant cells were also present as were compound granular corpuscles. A dense capsule, fibrous and glial in type, in which some very small areas resembled tubercles, surrounded the cavity.

Glial stains indicated a marked reactive gliosis, most pronounced around the base of the cystic cavity, and extending throughout the whole cortex. The Hortega stain revealed reactive proliferative forms of microglia. With this stain some compound granular corpuscles were seen surrounding some of the smaller blood vessels at the base of the cyst.

In summary, the reaction is indicative of the formation of a cystic cavity resulting from a chronic destructive process. Nerve cells were absent in the region of the cyst. The character of the cells changed gradually from nuclear types at the edge of the cavity to normal cells beyond.

*Group III C—Monkey 371 (Recurrent seizures).*

—A disc containing heat-killed typhoid bacilli incorporated in aquaphor was applied to the left motor cortex. Two and one-half months after operation transitory twitching of the right arm and face was occasionally noted. Five months after operation typical right-sided clonic seizures were elicited. These remained unilateral for 6 months, at which time the animal was sacrificed.

<sup>3</sup> Manufactured by the Duke Laboratories, Inc., Stamford, Conn. Aquaphor is a mixture of alcohols and esters of cholesterol (obtained from the non-saponifiable part of wool fat) and aliphatic hydrocarbons.



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Grossly, the right untreated cortex appeared normal. No histopathologic examination was made. On the left side, however, there was evidence of a severe destructive process underlying the disc. A cavity containing caseous material extended well into the underlying white matter. The cortex in this region was entirely destroyed and the lesion extended anteriorly into the frontal cortex.

Microscopically, necrotic material was present in the center of the involved area. In the region surrounding the disc there was definite lymphocytic infiltration. Numerous small areas of circumscribed infiltration contained numerous giant cells and indicated a fibrous reaction. Many of the cells were epithelioid in type. A severe glial reaction surrounded the involved area, with a marked proliferation of astrocytes. There was a considerable increase in the microglia with progressive changes in the region underlying the cavity.

In summary, this case presented a severe destructive process extending through the entire thickness of the cortex in the region underlying the applied disc.

*Group IV—Monkey 388 (No seizures).*—A disc containing aquaphor was placed over the right motor area. Although this animal was stimulated periodically for 9 months no seizures were ever elicited. Thereupon a second operation was performed, and a disc containing alumina cream was applied to the left motor cortex. Three weeks later the animal was found dead. No convulsive seizures had been observed although from previous experience they were imminent. It is interesting to note that the pathologic findings were less marked here than on the right, or control, side.

Grossly, both the left and right sides showed some indentation of the cortex, although the essential outlines and cortical markings could be seen.

Microscopically, on the right side the hematoxylin-eosin stain showed over the cortex a considerable amount of cellular exudate composed chiefly of large mononuclear cells. The blood vessels of the outer layers underlying the disc appeared to be increased both in number and size. There was an increase in glial nuclei, especially in the outer layers. A number of definite areas near the edge of the indentation revealed hemorrhage, gliosis, softening, and occasional perivascular infiltration. The latter was predominantly lymphocytic in character. Nerve cell stains showed a decrease in the number of nerve cells under the base of the indentation, and those which were present appeared somewhat shrunken and slightly elongated (Fig. 3). Numerous compound granular corpuscles were found in the small areas of softening. Fat stains revealed the presence of fat. Glial stains indicated a marked increase in glia in the outer layers of the cortex as well as subpially. The Cajal stain showed an increase in astrocytes in the region underlying the disc and in the areas of marked gliosis near the edge of the indentation where some softening had occurred (Fig. 4).

On the left side the microscopic picture was similar to that described for the right. The blood vessels were slightly less engorged, and in general,

the pathologic changes were somewhat less severe than on the right.

In summary, this case presents a chronic, proliferative, reactive process characteristic of a meningocortical cicatrix, of somewhat greater intensity on the right side. It is similar to the chronic lesions previously described, particularly in Group III A. Despite such characteristic pathologic changes, no convulsive seizures occurred at any time during the long period of observation (9 months).

## DISCUSSION

The cases presented in detail here are but a few selected as examples from a series of 102 experimental monkeys. They present complex and variable responses, both in respect to the clinical symptoms and pathologic changes in the brains. The variations in pathology and in clinical reaction did not necessarily run parallel. There did not seem to be a direct quantitative relationship between the extent of chronic pathologic involvement and the occurrence of seizures. Some brains with a relatively mild chronic, proliferative, meningocortical cicatrix were associated clinically with chronic or recurrent seizures related topographically to the area of scar; other brains with similar pathologic changes were never associated with seizures, even during long periods of observation. This was true, for example, of a series of 15 monkeys treated with discs containing control aquaphor preparations. Despite the undoubted occurrence of a definite and variable degree of chronic, progressive, proliferative, meningocerebral cicatrix, in none of these animals has a clinical seizure been observed, although some of them have remained alive for more than 1½ years following operation. On the other hand, application of alum preparations to the motor cortex resulted in seizures in nearly 100 per cent of the animals, with the same type and variation in degree of pathologic involvement of the brain as in the aquaphor controls. From examination of a large number of cases, it may be stated that pathologic changes have always been found to accompany seizures, but that seizures have not always accompanied pathologic changes, no matter how severe. Perhaps an exception to this statement may be found in those instances in which a single application of test substances to one motor cortex resulted in bilateral seizures. The basis of the bilaterality in such cases is not clear at present.

In general, as was indicated earlier, the pathologic findings fell into four groups. In the first, the picture was that of an acute hemorrhagic encephalopathy as seen in the Arthus phenomenon. It occurred in animals sensitized to an antigen prior to its application to the cortex. The pathologic process showed acute destruction of brain tissue without the proliferation otherwise encountered in animals which survived for longer periods of time. This group of cases did not appear to be of significance in elucidating the mechanism responsible for chronic or recurrent seizures. The second group, similarly not of primary interest for the problem of the chronic or recurrent seizure, again presented mainly a destructive type of pathologic alteration of the cortex. This was the group in which heavy metals were employed. The seizures, when present, occurred a short time after cortical application, lasted for only a brief period, and then ceased, with the occurrence of a variable degree of paresis in the affected limbs. The cortex under the disc was usually found to be destroyed to a variable depth. The nerve cells did not persist, even in altered form, except near the edge of the depression or softening, where they showed varying degrees of degenerative change. The glial reaction was, of course, limited to a zone around the periphery of the lesion. Where the process was acute, the astrocytes showed mainly fragmentation with a minimum degree of proliferation. In the more chronic cases, a zone of reactive gliosis tended to surround the area of softening. In this zone occasional compound granular corpuscles were found, as well as an increase in vascularity. The general process here was that of cortical necrosis, seemingly of the ischemic type. There was little of the motor cortex remaining in the area of "irritation" which might have served as a focal zone for recurrent seizures. Whether the seizures might have occurred had the zone of necrosis been entirely within the motor area, with the zone of reactive gliosis likewise confined within the motor area, is an interesting question not yet clarified. It is significant that recurrent seizures were not observed here despite the fact that histologic evidence of progressive tissue destruction around the edge of the necrotic area was present. In some respects this type of pathologic process,

with a central zone of severe necrosis, corresponds to that described previously in the reports from Penfield's laboratory. It would appear that the convulsions of the acute type which did occur in these cases were possibly a manifestation of the destructive or irritative process in the cortex during the early stages of developing necrosis.

The third group had a particular bearing on the problem of chronic or recurrent convulsive seizures of the type seen following brain wounds as described by Penfield and Humphreys (3) and Penfield and Bridges (4) in their studies on cortical epileptogenic foci. In these cases the pathology was essentially that of a chronic, progressive, proliferative, meningocortical cicatrix underlying the area of indentation associated with pressure probably resulting from the disc. To what extent these changes could be attributed to pressure alone is not clear, because it cannot be assumed that the material within the disc was without effect upon the tissues. Some of the changes in the nerve cells may indeed have been due, at least in part, to pressure. The pathologic picture in the cases associated with chronic or recurrent seizures involved changes predominately of the glia, nerve cells and blood vessels. Figs. 5, 6, and 7 are schematic drawings to indicate in summary form the essential features of these changes. The process in general does not exhibit the marked features of necrosis seen in the first two groups; but was rather a slow, progressive type of pathologic response, apparently due to the contact of test material and disc with the cortex. In some instances there were small areas of softening, limited in all cases to the marginal zone underlying the periphery of the disc. In these regions, as might well be expected, the cellular destruction and glial response were most pronounced. From the diagrams it will be seen that the nerve cells underlying the indentation of the disc were, in general, diminished in number as compared to normal areas of the cortex (Fig. 5). The diminution in number of cells was most marked in the outer layers of the cortex and in those regions where gliosis was most marked. However, the cell diminution extended even well into the depth of the cortex and involved, apparently, some of the large motor cells. Those that remained showed some shrinkage, dark-

staining cytoplasm and reorientation, with the long axis shifted to a position almost parallel to the base of the indentation. This change in axis was most marked near the

the shift in axis was due to pressure effects of the disc or a pull on the peripheral zone of cicatricized cortex by the meningocortical scar.

## NERVE CELLS

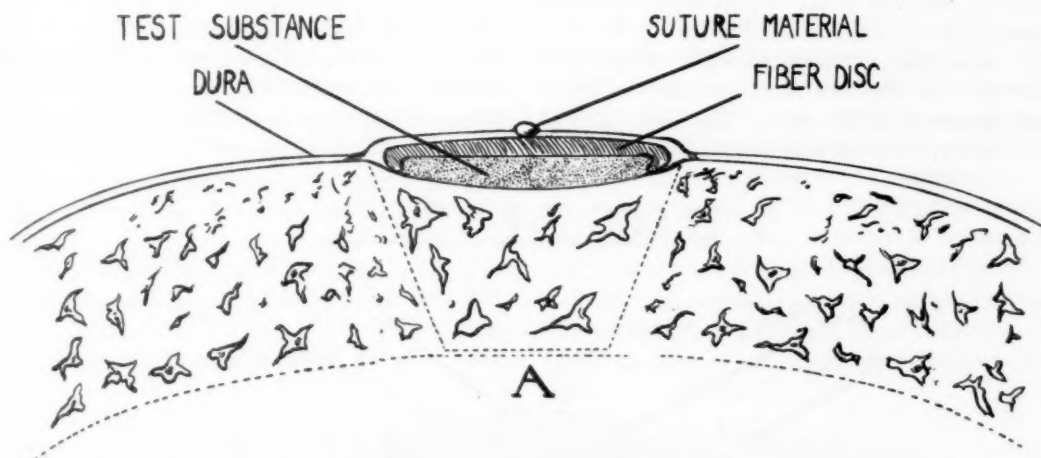


FIG. 5.—Zone A. Nerve cells diminished in number in varying degree. Cells appear shrunken, especially in outer cortex. Re-orientation of cell axes to parallel outer surface of indentation near its periphery.

## GLIA

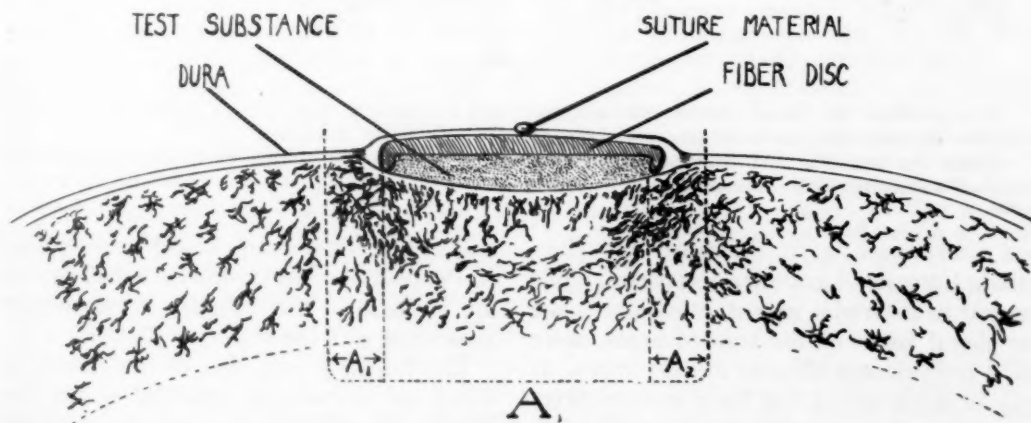


FIG. 6.—Zone A. Gliosis of varying degree, mainly fibrillary astrocytic in type. Increase in number and size of microglia. Process more marked in outer layers of cortex and in zones A1 and A2. Zones A1 and A2. Gliosis as above, more marked, especially in occasional small areas of softening. Occasional and variable numbers of compound granular corpuscles in these regions, mainly around blood vessels.

periphery of the hollow where the gliosis and the attachment of pia to overlying dura might have exerted considerable "pull." The question is of interest, therefore, as to whether

The glial response in these chronic cases was as great as might have been expected in a brain subjected to localized pressure and "irritative" factors applied to the surface of



the cortex. The proliferative activity was essentially of the fibrillary astrocytic type and was most marked at the surface of the cortex and in regions where more focal tissue destruction occasionally occurred, as for example, in zones A-1 and A-2 of the diagram (Fig. 6). It is of interest to note that in this narrow zone the effect of pressure, due to the apposition of the rim of the disc to the cortex, was most pronounced. This might also account for the fact that vascular occlusion was greatest in this zone. The microglia of the involved cortex were increased in number

The blood vessels, as shown in the diagram (Fig. 7), tended to be increased at the surface of the cortex underlying the area of indentation formed by the disc. In agreement with Penfield and his co-workers, it was found that the blood vessels in the involved areas tended to be of greater diameter and to have fewer side branches. The increase in vascularity was again most marked in the peripheral zone and in those regions where focal areas of softening had occurred. In our cases, satisfactory preparations of the vascular nerve network have not yet been obtained,

## BLOOD VESSELS

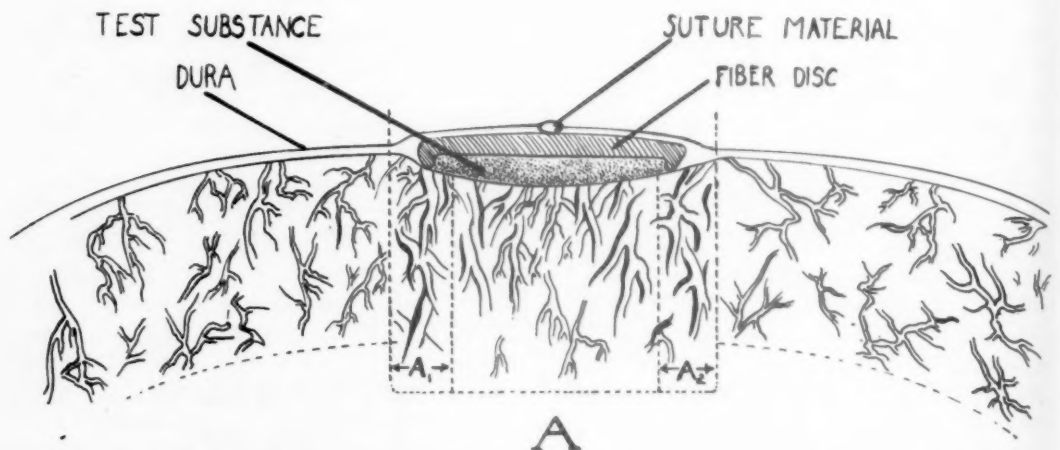


FIG. 7.—Zone A. Blood vessels generally increased in number, especially in outer cortical layers. Vascular channels tend to be larger, straighter, and to have fewer branches.

Zones A1 and A2. Above vascular processes tend to be more severe, particularly where small areas of softening have occurred.

and many were large, thickened and elongated. Compound granular corpuscles, while present to a variable extent, especially at the peripheral zones of the scarred areas, were not a predominant element in the picture. It may be safely stated that there was no direct correlation between the existence of such compound granular corpuscles and the appearance of chronic or recurrent seizures. The oligodendroglia, in general, showed changes limited to acute swelling, which again was most marked in the regions where focal tissue destruction was greatest. No transitional forms of oligodendroglia to compound granular corpuscles were observed in any of these cases.

and at present we cannot add to the reports of Penfield and his co-workers dealing with the increase in the vascular nerve network associated with the scar.

The fourth group, that of the controls in which no convulsions occurred at any time despite the application of various materials to the cortex and despite the occurrence of pathologic changes similar to that in Group III, is of considerable interest. This group would seem at least to offer evidence as to the relative insignificance of the pressure or purely mechanical factors alone in the production of seizures. The discs exerted the same pressure as in the "active" cases. The surgical procedure was the same and, more



important, the pathologic picture was essentially the same in type. Despite these facts, no convulsions occurred. It would seem therefore, that none of the pathologic findings as seen in the "active" cases, as determined by the methods employed in this study, are of themselves sufficient to explain the occurrence of seizures.

It might have been anticipated that pathologic tissue changes alone would not have been sufficient to account for the occurrence of seizures, since many human patients with brain injuries of various types have never developed seizures, whereas others with similar injuries have. It would seem, on the basis of our present findings, that the structural tissue changes contribute in some way to the occurrence of seizures in the sense that they are one of many complex factors in a focal epileptogenic zone, any or all of which may have in some way altered the physiologic threshold of the zone in question. From our study it would appear that chemical, allergic and structural tissue factors may all play a role in the production of seizures. Whether there is a so-called constitutional factor which predisposes certain animals to convulsions, providing other precipitating factors are introduced, remains to be determined. Evidence of this nature has been suggested in human patients where studies of hereditarily determined predisposition to convulsions have been made. It would seem, however, that such a factor is not of primary significance in the monkey since chronic or recurrent seizures can be produced in this species with regularity when alum-bearing substances are applied to the cortex.

One of the most important features of this general investigation has been the production of a chronically or recurrently convulsing animal. It would seem that, with the possibility of systematically producing cortical epileptogenic foci in the monkey, further studies may be made utilizing electrophysiological or electrochemical methods in an attempt to analyze physiologic or functional changes associated with the tissue changes found in chronic or recurrent seizures.

## SUMMARY

By means of a single application to the cerebral motor cortex of certain chemical and immunologic agents, it has been possible to produce convulsive seizures in the rhesus monkey. Of more significance than the acute manifestations observed, was the state of chronic convulsive reactivity induced.

A histopathologic examination of monkeys exhibiting recurrent convulsive seizures indicated a pathologic process which was essentially that of a chronic progressive meningo-cortical cicatrix. However, a similar type of lesion was produced by control preparations which failed to induce convulsive seizures at any time during a long observation period.

From this study it must be concluded that the pathologic changes observed were insufficient to account by themselves for the convulsive manifestations.

## ACKNOWLEDGMENT

We wish to thank Margaret Mara for her assistance in the histologic preparations.

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# THE ELECTROENCEPHALOGRAM IN POST-TRAUMATIC EPILEPSY<sup>1</sup>

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The purpose of the present investigation was to determine whether there are differences between the electroencephalograms of a series of post-traumatic epileptics<sup>2</sup> compared with a series of patients with head injuries but without convulsions, and whether both of these groups differ from a random sample of epileptics. It was supposed that if differences were found, they would be useful for diagnosis and prognosis.

Absolutely reliable data on the significance of the electroencephalogram in head injury will not be forthcoming until a large random sample of all types of head injury has been followed over a period of five or ten years. Such a study is formidable but several laboratories have already embarked on it. Years must pass before their results become available. In the interval, valuable information can be gained from short-time follow-up study like that of Williams(1) on 74 cases of recent head injury, or from cross section data on selected post-traumatic groups like the 27 cases of Marmor and Savitsky(2), the 64 cases of Jasper, Kershman and Elvridge(3), the 50 cases of Glasser and Sjaardema(4), the 600 cases of Williams(5) and the 150 cases of Heppenstall and Hill(6).

All these workers agree that electroencephalographic abnormalities are common

after head injury, that they tend to disappear with the lapse of time and that there is a general, though by no means invariable correlation between the electroencephalogram and the extent of brain damage and the patient's clinical condition. Williams(1) has shown that after a head injury abnormalities tend to disappear rapidly at first and then more slowly. In his series, the most rapid improvement usually occurred in the first three weeks and the recovery curve tends to have the same shape, though the time-base varies with the extent and character of the injury, *i. e.*, the degree and kind of brain damage determines whether the rapid phase of recovery will be completed in hours, days or weeks. From these considerations it is evident that the amount of abnormality appearing in the record will depend on (1) the physical force applied to the brain, (2) the ability of the brain to resist injury, and (3) the time that has elapsed since the injury. These considerations make it desirable to study mild and severe injuries separately, to determine whether age is an important factor, and to analyze the data in terms of time since the injury.

## MATERIAL

One hundred seventy-five cases of post-traumatic epilepsy<sup>3</sup> and 215 cases of head injury without convulsions were studied. One electroencephalogram was taken in each case three or more months after the day of injury. In many cases, repeated studies were carried out to check on the constancy of the focus over a period of days or weeks, but these data will not be considered in the present report. The electroencephalograms of these post-traumatic patients were contrasted with electroencephalograms of 1,161 epileptics and 1,000 normal subjects. Both

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-15, 1943.

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<sup>2</sup> Post-traumatic epilepsy is defined as one or more epileptic seizures after the acute phase of a head injury has passed, yet close enough to the injury to suggest an etiologic relationship. If the seizures begin long after the injury, they may still be considered post-traumatic provided they are localized in a special manner or associated with a particular constellation of symptoms which suggest that they are etiologically related to the injury.

<sup>3</sup> See footnote 2.

these large groups have been reported on previously (7); the former was a random sample of patients coming to the Boston City Hospital with a diagnosis of epilepsy; it included cases of post-traumatic epilepsy. The 175 cases of post-traumatic epilepsy were derived not from this but from a slightly larger and similar general sample. The 215 post-traumatic cases without seizures were patients who came for electroencephalographic examination because of a history of head trauma. This group was subdivided into 113 mild and 102 severe cases. The case was considered severe if one or more of the following con-

ditions were present—bloody spinal fluid, unconsciousness for more than one hour, a depressed or compound fracture of the skull, brain laceration or subdural hematoma; all other cases were considered mild.

Information is not available on the total sample of hospital admissions for head injury from which these post-traumatic epileptics and post-traumatic patients without epilepsy were derived. The fact that these two groups are selected samples from a larger group of unknown size and composition is a serious disadvantage. It is hazard-

TABLE I  
INCIDENCES OF VARIOUS EVIDENCES OF INJURY IN CASES OF SEVERE HEAD INJURY  
WITHOUT SEIZURES AND IN POST-TRAUMATIC EPILEPTICS

| Evidences of injury                        | Severe head injury without seizures<br>(102 cases) |          | Post-traumatic epilepsy<br>(175 cases) |          |
|--------------------------------------------|----------------------------------------------------|----------|----------------------------------------|----------|
|                                            | No.                                                | Per cent | No.                                    | Per cent |
| Unconscious for more than 1 hour.....      | 102                                                | 100      | 144                                    | 80       |
| Bloody spinal fluid.....                   | 56                                                 | 55       | 83                                     | 47       |
| Brain laceration.....                      | 23                                                 | 23       | 33                                     | 18       |
| Compound fracture.....                     | 21                                                 | 21       | 18                                     | 10       |
| Depressed fracture.....                    | 5                                                  | 5        | 10                                     | 6        |
| Subdural hematoma.....                     | 8                                                  | 8        | 12                                     | 7        |
| Extradural hematoma.....                   | 2                                                  | 2        | 1                                      | 1        |
| None of the above evidences of injury..... | 0                                                  | 0        | 31                                     | 18       |

ditions were present—bloody spinal fluid, unconsciousness for more than one hour, a depressed or compound fracture of the skull, brain laceration or subdural hematoma; all other cases were considered mild.

The incidence of the various indications of severe head injury in the post-traumatic groups is shown in Table I. This table allows the severity of injury in the present series to be estimated, which is of particular importance if the electroencephalographic data from the present series are to be compared with those from other series. A higher percentage of brain lacerations and depressed fractures will be associated with a higher incidence of electroencephalographic abnor-

malities. Table I is of immediate significance for it gives assurance that the post-traumatic epileptics here considered had as a group less severe head injuries than the patients with severe head injuries but no seizures; they might therefore be expected to show less abnormality than the latter.

ous to carry over conclusions based on these special groups to the general group of patients with head injuries.

Since electroencephalograms were taken three months or more after injury, the present study concerns itself exclusively with the chronic phase of the post-traumatic state. This restriction was decided on after we had corroborated Williams' observation (1) that the amount of electroencephalographic abnormality is exceedingly high immediately after the injury, declines rapidly in the first few weeks and more slowly thereafter. The number of cases with a given interval between the time of the injury and the electroencephalographic examination is shown in

Table II. It was hoped that by restricting the present study to the chronic post-traumatic state, the importance of this time factor could be reduced to a point where it would

be safe to disregard it. However, as indicated by Table II and Fig. 1, this time factor is still operating in the period that we have chosen to consider.

TABLE II  
ELECTROENCEPHALOGRAPHIC FINDINGS IN POST-TRAUMATIC GROUPS WITH ELECTROENCEPHALOGRAPHIC EXAMINATION AT A GIVEN TIME AFTER INJURY

POST-TRAUMATIC GROUPS

| Interval between injury and EEG. | Mild head injury without epilepsy |            |                           |                    |                             | Severe head injury without epilepsy |            |                           |                    |                             | Post-traumatic epilepsy |            |                           |                    |                             |
|----------------------------------|-----------------------------------|------------|---------------------------|--------------------|-----------------------------|-------------------------------------|------------|---------------------------|--------------------|-----------------------------|-------------------------|------------|---------------------------|--------------------|-----------------------------|
|                                  | Normal EEG.                       | Focal EEG. | Generalized abnormal EEG. | Total number cases | Per cent with abnormal EEG. | Normal EEG.                         | Focal EEG. | Generalized abnormal EEG. | Total number cases | Per cent with abnormal EEG. | Normal EEG.             | Focal EEG. | Generalized abnormal EEG. | Total number cases | Per cent with abnormal EEG. |
| 3-5 months.....                  | 25                                | 1          | 6                         | 32                 | 22                          | 9                                   | 7          | 8                         | 24                 | 63                          | 1                       | 14         | 7                         | 22                 | 96                          |
| 6-11 months....                  | 14                                | 0          | 3                         | 17                 | 18                          | 7                                   | 4          | 4                         | 15                 | 53                          | 2                       | 14         | 9                         | 25                 | 92                          |
| 1-2 years.....                   | 22                                | 0          | 5                         | 27                 | 19                          | 8                                   | 4          | 3                         | 15                 | 47                          | 2                       | 11         | 8                         | 21                 | 90                          |
| 2 years +.....                   | 31                                | 1          | 5                         | 37                 | 16                          | 30                                  | 4          | 14                        | 48                 | 38                          | 9                       | 50         | 48                        | 107                | 92                          |

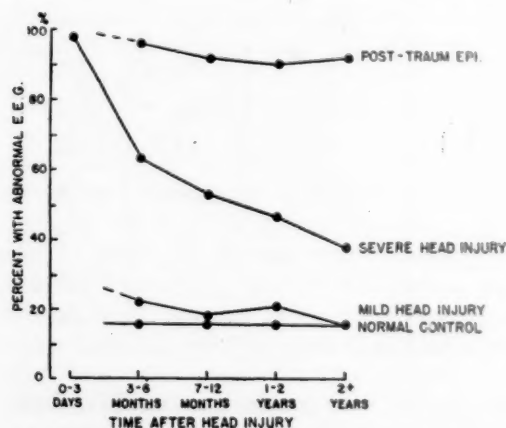


FIG. 1.—Declining incidence of abnormal electroencephalograms with increasing time after injury in cases with severe head injury but no convulsions. For the sake of completeness, a group of 37 cases studied during the first three days after severe head injury is included. The percentage incidence of abnormal electroencephalograms in this group is indicated by the height of the dotted column.

The figure should be read as follows: Ninety-eight per cent of the cases with severe head injury studied electroencephalographically zero to three days after injury had abnormal electroencephalograms; 63 per cent of those studied three to five months after injury had abnormal electroencephalograms. With the exception of the acute group, the number and percentage of cases in each group are shown in Table II.

# METHOD

The electrical activity from six cortical areas was recorded simultaneously with a six-channel Grass electroencephalograph. Monopolar leads were used; the "indifferent" electrode was formed by interconnecting the two ear lobes, and the "active" electrodes were placed over the frontal, parietal, occipital and temporal areas on both sides.

Despite various "theoretical" objections, experience with both monopolar and bipolar leads has shown that six monopolar leads give a clear, accurate and simple picture of both localized and generalized disorders. In our experience, if a six-channel instrument is used, monopolar leads are preferable for localization.

# RESULTS

The importance of the length of time that has elapsed since the injury (Table II) must not be overlooked. Fig. 1 shows that in cases of severe head injury there is an inverse relationship between the interval since injury and the incidence of abnormal electroencephalograms but among post-traumatic epileptics this relationship is much less evident. In this figure, acute cases without seizures



| Cases | Per cent with abnormal EEG. |
|-------|-----------------------------|
| 2     | 96                          |
| 5     | 92                          |
| 1     | 90                          |
| 7     | 92                          |

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are included for the sake of completeness. However, it must be recognized that many of these acute cases with severe injury may later become post-traumatic epileptics. The same statement holds for the entire series of cases of severe head injuries without seizures, but, as will be shown later, the statement applies particularly to cases studied soon after injury. Therefore, Fig. 1 cannot be taken at its face value. Some of the decline in abnormality soon after injury in the severe group without seizures may be the result of cases dropping out because they became epileptics. Thus, the high level for the incidence of abnormalities among cases of severe head injury may be in part due to the inclusion of cases that are destined to become post-traumatic epileptics. No data are available from the present study on the incidence of abnormalities among post-traumatic epileptics immediately after injury for patients were classified according to the immediate diagnosis. Only one electroencephalogram was taken and no attempt was made to check back on the acute records of patients who subsequently became epileptics. Mild head injuries show a lower incidence of electroencephalographic abnormality and two years after the injury decline to the 16 per cent level of the normal control group.

The generally recognized tendency for seizures to begin soon after head injury is manifest in Fig. 2. Since electroencephalographic abnormalities and clinical seizures are believed to be related, it seems likely that the decline in the electroencephalographic abnormalities shown in Fig. 1 and the declining danger of clinical seizures indicated by Fig. 2 rest upon the same or at least on a similar recovery process. This statement may sound paradoxical in view of the fact that the cases with electroencephalographic abnormalities shown in Fig. 1 were selected because they had no clinical seizures. However, it is not as paradoxical as it sounds, for although there is a relationship between electroencephalographic abnormalities and clinical seizures, these abnormalities can and commonly do occur in the absence of seizures, as for example, in the near relatives of epileptics. They indicate an increased likelihood of seizures. Therefore, it can be said that even in cases where no seizures have ap-

peared, the decline in abnormalities (Fig. 1) roughly parallels the decline in the likelihood of seizures (Fig. 2).

Jasper(8) has suggested an electroencephalographic classification based on the spread of the electroencephalographic abnormality. We agree that a distinction between localized and generalized disorders is valid and of great clinical importance(9, 10, 11). In Fig. 3 is shown the percentage incidence of generalized abnormality, focal abnormality, and no abnormality in a large group of control subjects, in patients with mild head injury, in cases with severe head injury but no seizures, in post-traumatic epileptics and in a large group of unselected epileptics. This figure indicates that generalized abnormality is only slightly

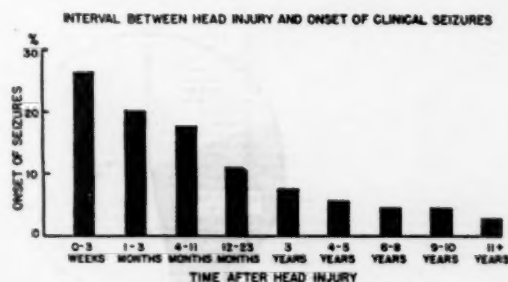


FIG. 2.—Distribution of 175 cases of post-traumatic epilepsy in terms of the interval between injury and onset of seizures. This figure should be read as follows: Twenty-seven per cent of the cases in the present series of post-traumatic epileptics had seizures beginning within three weeks after injury; only 3 per cent had seizures beginning eleven or more years after injury.

greater in cases of mild head injury than in the normal control group. The fact that some cases with focal abnormality are found among those with mild head injury might be explained by assuming that in such cases, although the injury appeared to be mild, it was in fact severe. Cases with severe head injury show an increased incidence of abnormality, particularly of the focal type, and differ from cases of mild head injury almost as much as from the normal control group. The incidence of abnormality, and particularly of focal abnormality is greater in post-traumatic epileptics than in patients with severe head injuries without seizures. The post-traumatic epileptics differ from the general unselected sample of epileptics chiefly

as regards the ratio of focal to generalized abnormality. Focal abnormality is commoner in the post-traumatic epileptics than in any of the other groups that are considered.

The importance of age in electroencephalographic studies on epilepsy has been stressed

and particularly focal abnormality, after head injury, and this is in accord with Heppenstall and Hill's observations.

Although the coarse electroencephalographic classification—normal, and focal or generalized abnormal—is of great practical value, further subdivisions are possible and

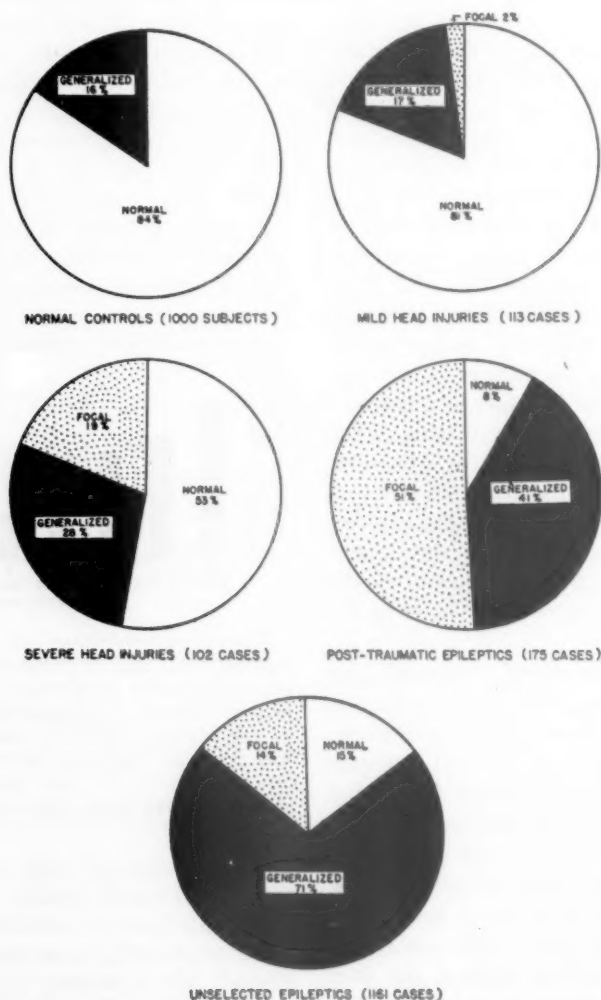


FIG. 3.—Percentage incidence of normal, focal and generalized abnormal electroencephalograms in various clinical groups.

in previous publications(7, 12). Heppenstall and Hill(6) believe that children and adults respond differently to head injury. The small number of cases in the present series does not permit adequate consideration of this question, but from Table III, where children and adults are considered separately, it appears that children are more likely than adults to show electroencephalographic abnormality,

at times desirable. For this purpose, we employ a classification based on significant differences in frequency and wave-form(7). A brief summary of this classification is shown in Fig. 4. Nine categories (8½ to 12 per second in Fig. 4) are considered normal; two (S-I and F-I in Fig. 4) are considered mildly abnormal; three (S-2, S-3 and F-2 in Fig. 4 and legend) are considered very

abnormal and suggestive of epilepsy or a related disorder, and five (P.M.V., P.M., Psy., Spikes and G.M. in Fig. 4) are considered definitely suggestive of epilepsy.

An analysis in terms of this classification of the various coarse divisions shown in the circles in Fig. 1 is presented in Table IV.

ysmal and non-paroxysmal (*see* legend for Fig. 3). As will be seen, the distinction between paroxysmal and non-paroxysmal brings out greater differences between the clinical groups than are apparent when abnormalities are divided only into focal and generalized. For example, all paroxysmal

TABLE III

NUMBER OF CHILDREN AND ADULTS IN VARIOUS CLINICAL GROUPS AND  
ELECTROENCEPHALOGRAPHIC CATEGORIES

CLINICAL CLASSIFICATION OF POST-TRAUMATIC CASES

| EEG. classification      | Mild head injury<br>without epilepsy |        | Severe head injury<br>without epilepsy |        | Post-traumatic<br>epilepsy |        | Total    |          |        |          |
|--------------------------|--------------------------------------|--------|----------------------------------------|--------|----------------------------|--------|----------|----------|--------|----------|
|                          |                                      |        |                                        |        |                            |        | Children |          | Adults |          |
|                          | Children                             | Adults | Children                               | Adults | Children                   | Adults | No.      | per cent | No.    | Per cent |
| Normal.....              | 24                                   | 68     | 13                                     | 41     | 3                          | 11     | 40       | 32       | 120    | 46       |
| Focal.....               | 1                                    | 1      | 8                                      | 11     | 45                         | 44     | 54       | 43       | 56     | 21       |
| Generalized abnormal.... | 5                                    | 14     | 8                                      | 21     | 19                         | 53     | 32       | 25       | 88     | 33       |
| Total.....               | 30                                   | 83     | 29                                     | 73     | 67                         | 108    | 126      | 100      | 264    | 100      |

TABLE IV

SUBCLASSIFICATION OF FOCAL AND NON-FOCAL ELECTROENCEPHALOGRAMS  
ON THE BASIS OF WAVE-PATTERN

| Clinical group                         | Spread      | Wave-pattern |       |      |     |     |     |     |     |     |        |       |       |
|----------------------------------------|-------------|--------------|-------|------|-----|-----|-----|-----|-----|-----|--------|-------|-------|
|                                        |             | P. M. V.     | P. M. | Psy. | S-3 | S-2 | S-1 | N.  | F-1 | F-2 | Spikes | G. M. | Total |
| Normal controls                        | Focal       | 0            | 0     | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0      | 0     | 0     |
|                                        | Generalized | 0            | 4     | 5    | 0   | 7   | 76  | 842 | 62  | 4   | 0      | 0     | 1000  |
| Mild head injury<br>without epilepsy   | Focal       | 0            | 0     | 0    | 0   | 2   | 0   | 0   | 0   | 0   | 0      | 0     | 2     |
|                                        | Generalized | 0            | 0     | 0    | 0   | 2   | 9   | 92  | 7   | 1   | 0      | 0     | 111   |
| Severe head injury<br>without epilepsy | Focal       | 0            | 0     | 0    | 5   | 11  | 0   | 1*  | 0   | 1   | 1      | 0     | 19    |
|                                        | Generalized | 0            | 0     | 1    | 0   | 4   | 14  | 54  | 10  | 0   | 0      | 0     | 83    |
| Post-traumatic<br>epilepsy             | Focal       | 5            | 9     | 2    | 16  | 22  | 0   | 4*  | 0   | 11  | 18     | 2     | 89    |
|                                        | Generalized | 0            | 6     | 2    | 0   | 13  | 17  | 14  | 24  | 7   | 3      | 0     | 86    |
| Unselected<br>epileptics               | Focal       | 19           | 14    | 2    | 44  | 22  | 0   | 1*  | 0   | 11  | 45     | 2     | 160   |
|                                        | Generalized | 18           | 230   | 90   | 0   | 321 | 193 | 150 | 140 | 62  | 23     | 22    | 1001  |

\*Amplitude asymmetry.

Because of the small number of cases in the post-traumatic groups, and because of the smallness of some segments, percentage differences between the incidence of various individual categories are not given. Table V, which does show percentages, is derived from Table IV by dropping all distinctions except normal, focal, generalized abnormal, parox-

ysmal and non-paroxysmal (see legend for Fig. 3). As will be seen, the distinction between paroxysmal and non-paroxysmal brings out greater differences between the clinical groups than are apparent when abnormalities are divided only into focal and generalized. For example, all paroxysmal



number of cases in the present series is too small to give significance to these single categories.

damage as indicated by neurological signs or symptoms. In this series also, focal electroencephalographic abnormalities tend to be

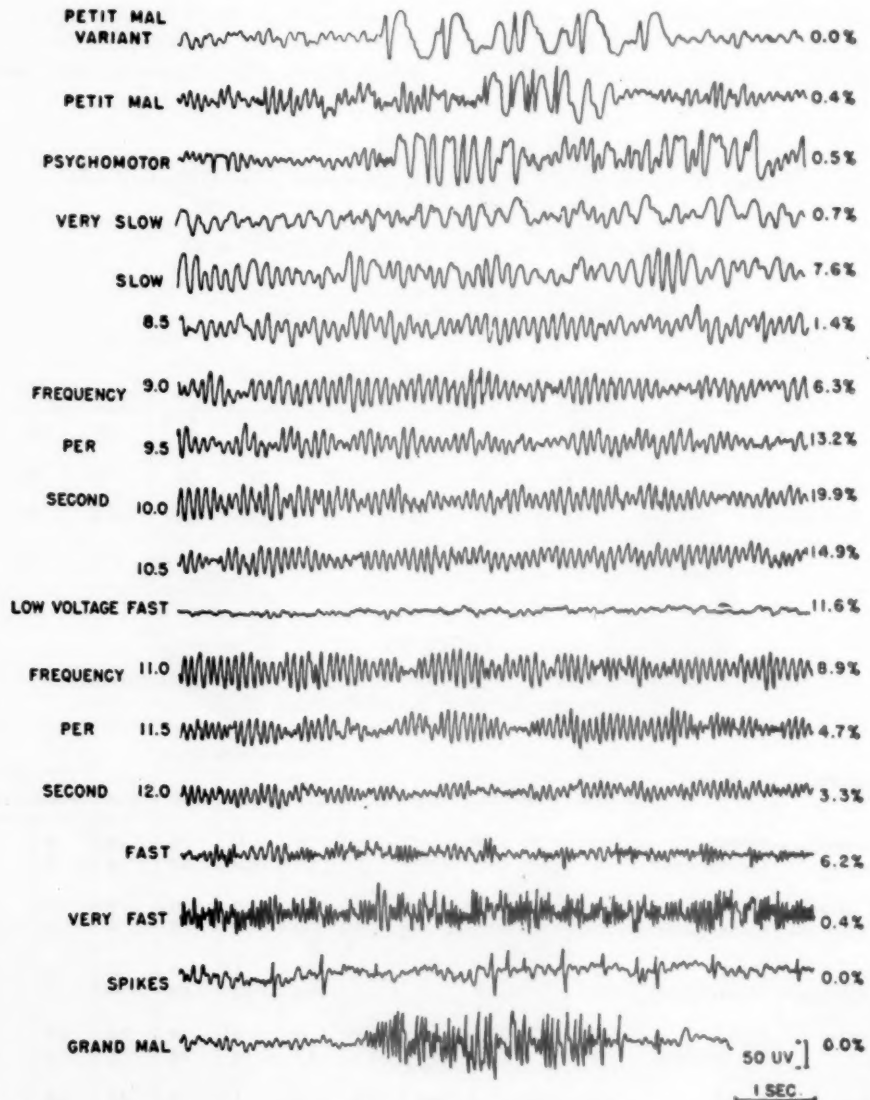


FIG. 4.—Types of pattern encountered in adult electroencephalograms. The order in which they are arranged is slow at the top, fast at the bottom. The top three and bottom two patterns are classed as paroxysmal, *i. e.*, manifesting seizure-discharges. The names applied to each pattern are shown at the left. The percentage incidence of each pattern in the normal control group appears at the right. A category referred to as exceedingly slow or Slow 3 is not shown; the dominant frequency is  $\frac{1}{2}$  to 2 per second. It is never encountered in normal controls, and such activity, if generalized, is usually associated with impairment of consciousness. When encountered in conscious persons, it is likely to be focal. Time and voltage calibrations are given in the lower right corner.

A previous report (11) has shown a high degree of correlation between the presence and location of the electroencephalographic focus and the presence and location of brain

associated with focal neurological signs and symptoms (Table VI). Focal abnormalities are not found in the normal control series. These observations are in accord with the

previous conclusion that focal electroencephalographic abnormality suggests localized brain damage(11).

No special study was made of the subjective complaints which are commonly classified under the heading *post-traumatic syndrome*. It was noted, however, that the incidence of abnormal electroencephalograms among post-traumatic cases with only subjective symptoms was 24 per cent (Column 4, Table VI), but the incidence of abnormality among those who had no complaints and no symptoms (Column 2, Table VI) was almost twice as high (42 per cent). These figures cannot be taken at their face value,

brain damage, or (3) the presence of convulsions.

Heppenstall and Hill(6) have emphasized the importance of distinguishing between focal and generalized abnormalities in the post-traumatic state and our data supports their opinion that focal abnormalities "are found significantly more often in true post-concussive syndromes and post-traumatic epilepsy" than in some other groups. As stated before, our findings also agree with their conclusion that electroencephalographic abnormalities are more common in children in the post-traumatic state than in adults. Data were not obtained on the family history

TABLE V  
INCIDENCE OF VARIOUS ELECTROENCEPHALOGRAPHIC DIAGNOSES IN DIFFERENT CLINICAL GROUPS

| EEG. diagnosis                            | CLINICAL DIAGNOSIS |                  |                    |                         |                       |
|-------------------------------------------|--------------------|------------------|--------------------|-------------------------|-----------------------|
|                                           | Normal             | Mild head injury | Severe Head injury | Post-traumatic epilepsy | Unselected epileptics |
| Normal.....                               | 84                 | 81               | 53                 | 8                       | 15                    |
| Focal paroxysmal.....                     | 0                  | 0                | 1                  | 21                      | 7                     |
| Focal non-paroxysmal.....                 | 0                  | 2                | 18                 | 30                      | 7                     |
| (Focal).....                              | (0)                | (2)              | (19)               | (51)                    | (14)                  |
| Generalized paroxysmal.....               | 1                  | 0                | 1                  | 6                       | 33                    |
| Generalized non-paroxysmal abnormality... | 15                 | 17               | 27                 | 35                      | 38                    |
| (General abnormality).....                | (16)               | (17)             | (28)               | (41)                    | (71)                  |
| Total.....                                | 100                | 100              | 100                | 100                     | 100                   |

for the incidence of severe head injuries among those with no complaints or symptoms was higher than among those with only subjective symptoms. A little consideration will make it apparent why this occurred: Ordinarily patients with mild head injuries and no symptoms or complaints do not come to the hospital, whereas patients who have sustained severe head injuries do come to the hospital, and they will return to the hospital for follow-up studies, even though they are symptom-free. However, despite this "sampling error," it is obvious from the figures just cited that the correlation between subjective complaints and abnormalities in the electroencephalogram is relatively feeble as compared with the correlation shown by such factors as (1) severity of injury, (2) clinical signs and symptoms of organic

of the patients in the present post-traumatic series so that Heppenstall and Hill's observation(6) that "positive" family histories are commoner among post-traumatic patients with generalized electroencephalographic disorder than among those with localized disorder cannot be corroborated. However, Lennox has seen two cases of inherited focal disorder(13) and we have seen many cases without a family history of central nervous system disease but with diffuse brain damage and generalized electroencephalographic abnormalities following severe head injury. Therefore, in the individual case the relative importance of constitutional or traumatic factors cannot be determined on the basis of focal or generalized abnormality.

Any statistics or conclusions dealing with the post-traumatic state are likely to be

TABLE VI  
THE ASSOCIATION OF VARIOUS ELECTROENCEPHALOGRAPHIC DIAGNOSES WITH DIFFERENT CLINICAL SYMPTOMS IN THE CHRONIC POST-TRAUMATIC STATE  
CLINICAL SYMPTOMS\*

| EEG, diagnosis                             | Symptom-free |          | Subjective complaints |          | Non-focal objective signs or symptoms |          | Focal signs |          | Generalized seizures |          | Focal signs and generalized seizures |          | Focal signs and focal seizures |          | Focal seizures |          | Total |          |
|--------------------------------------------|--------------|----------|-----------------------|----------|---------------------------------------|----------|-------------|----------|----------------------|----------|--------------------------------------|----------|--------------------------------|----------|----------------|----------|-------|----------|
|                                            | No.          | Per cent | No.                   | Per cent | No.                                   | Per cent | No.         | Per cent | No.                  | Per cent | No.                                  | Per cent | No.                            | Per cent | No.            | Per cent | No.   | Per cent |
| Normal.....                                | 16           | 58       | 105                   | 76       | 23                                    | 58       | 2           | 20       | 13                   | 10       | 0                                    | 0        | 0                              | 0        | 1              | 5        | 160   | 41       |
| Focal paroxysmal.....                      | 0            | 0        | 0                     | 0        | 1                                     | 3        | 0           | 0        | 26                   | 20       | 3                                    | 30       | 4                              | 36       | 6              | 28       | 40    | 10       |
| Focal non-paroxysmal.....                  | 4            | 14       | 5                     | 4        | 5                                     | 13       | 6           | 60       | 26                   | 19       | 5                                    | 50       | 7                              | 64       | 12             | 57       | 70    | 18       |
| (Focal).....                               | (4)          | (14)     | (5)                   | (4)      | (6)                                   | (16)     | (6)         | (60)     | (52)                 | (39)     | (8)                                  | (80)     | (11)                           | (100)    | (18)           | (85)     | (110) | (28)     |
| General paroxysmal.....                    | 0            | 0        | 0                     | 0        | 1                                     | 3        | 0           | 0        | 11                   | 8        | 0                                    | 0        | 0                              | 0        | 1              | 5        | 13    | 3        |
| Generalized non-paroxysmal abnormality.... | 8            | 28       | 28                    | 20       | 9                                     | 23       | 2           | 20       | 57                   | 43       | 2                                    | 20       | 0                              | 0        | 1              | 5        | 107   | 28       |
| (Generalized abnormality).....             | (8)          | (28)     | (28)                  | (20)     | (10)                                  | (26)     | (2)         | (20)     | (68)                 | (51)     | (2)                                  | (20)     | (0)                            | (0)      | (2)            | (10)     | (120) | (31)     |
| Total.....                                 | 28           | 100      | 138                   | 100      | 39                                    | 100      | 10          | 100      | 133                  | 100      | 10                                   | 100      | 11                             | 100      | 21             | 100      | 390   | 100      |

\*At the left in this table are the symptoms or combination of symptoms that do not correlate with abnormalities in the electroencephalogram; at the right are signs and symptoms suggesting brain damage or epilepsy that do correlate with electroencephalographic abnormalities.

The exclusiveness and inclusiveness of the symptom groups needs explanation.

Subjective complaints includes only cases with subjective symptoms but without objective signs or symptoms.

Non-focal objective signs or symptoms includes cases with focal neurological signs but without seizures.

Focal signs includes cases with focal neurological signs but without seizures.

Generalized seizures includes all cases with generalized convulsions and without focal signs or focal seizures.

Focal signs and generalized seizures includes all cases with both but excludes cases with focal seizures.

Focal signs and focal seizures includes all cases with both.

Focal seizures includes all cases with localized seizures but without focal signs.



quoted in legal proceedings. In order to guard against misinterpretation, it is important that various restrictions and limitations referred to in this report be carefully observed. What may seem to be an inconsequential phrase, for example, "severe head injury cases in the post-traumatic, non-acute phase," is in fact an exceedingly important restriction, for statements made about such cases do not apply to head injury cases in general. It might be argued that the data should be so organized that it would lead to generalizations. However, the electroencephalogram (or any type of evidence for that matter) gains diagnostic and prognostic significance when it is restricted. The limitations that have been imposed seemed necessary to the sense of the present data.

Interpretations of the electroencephalogram are valid only when supported by a statistically significant number of cases. At times, the statistical basis for an interpretation is assumed as when an expert says, "This occurs rarely." However, both science and the law would benefit if the statistical basis for all interpretations were plainly indicated. Since, at present, electroencephalographic interpretations are usually based on a dangerously small number of cases, it is particularly important that numbers be given.

Some of the deductions that can be made from the present data are the following:

1. *Focal electroencephalographic abnormality is strongly suggestive of brain damage.* It was never encountered in 1,000 normal control subjects (Fig. 3); it was found in 83 per cent of the 53 cases in the present series with neurological evidence of localized brain damage (Table VI). However, absence of focal electroencephalographic abnormality does not indicate that the brain is undamaged. In 17 per cent of the 53 cases in the present series with neurological evidence of localized brain damage, no electroencephalographic focus was found (Table VI).

2. *Other things being equal, if generalized electroencephalographic abnormality is present three or more months after a mild head injury (See definition under Material.), the chances are sixteen to one that this abnormality antedated the injury.* In 100 normal control subjects, 16 can be expected to have generalized electroencephalographic abnormality

(percentage based on 1,000 controls), whereas after mild head injury, 17 can be expected to have generalized abnormality (percentage based on 113 cases). Thus, in only one case out of 17 need the generalized abnormality be ascribed to the injury.

3. *Other things being equal, if generalized electroencephalographic abnormality is found three or more months after a severe head injury without epilepsy (See definition under Material.), the chances are twenty-eight to sixteen that this abnormality was caused by the injury.* In 100 normal control subjects 16 can be expected to have generalized electroencephalographic abnormality (percentage based on 1,000 normal controls), whereas after severe head injury without epilepsy, 28 can be expected to have such abnormality (percentage based on 102 cases).

4. *In post-traumatic cases, even though the electroencephalogram is normal, the brain may be damaged.* Among the 160 cases with normal electroencephalograms in the total series of post-traumatic cases, three had neurological evidence of localized brain damage (Table VI).

5. *If a paroxysmal abnormality is found three or more months after head injury, the chances are at least twenty-seven to two that the patient has epilepsy.* Among 175 cases with post-traumatic epilepsy, 27 per cent had paroxysmal abnormalities, whereas among the 102 cases with severe head injury but no seizures only two had paroxysmal abnormalities (Table V).

6. *Other things being equal, if a patient has seizures and shows focal paroxysmal abnormality three or more months after head injury, the chances are twenty-one to seven that he has the seizures as a result of the injury rather than as a result of the other known and unknown factors that produce seizures in an unselected group of epileptics.* Twenty-one per cent of the 175 patients with post-traumatic epilepsy had focal paroxysmal disorder, whereas only 7 per cent of the 1,161 unselected epileptics had such an abnormality.

7. *Other things being equal, and in the absence of a definite history of head injury if the electroencephalogram shows generalized paroxysmal abnormality, the chances are at least thirty-three to six that the epilepsy is not post-traumatic.* Out of 1,161 unselected

epileptics, 33 per cent had this type of abnormality, whereas out of 175 post-traumatic epileptics, six per cent had generalized paroxysmal abnormality.

8. *Other things being equal, if a normal electroencephalogram is found three or more months after head injury, the chances are at least fifty-three to eight that the patient is not a post-traumatic epileptic.* The lowest incidence of normal electroencephalograms in post-traumatic cases without epilepsy was 53 per cent (severe head injury, Table V), whereas the incidence of normal electroencephalograms in post-traumatic epilepsy was 8 per cent (all percentages based on more than 100 cases). Given equal numbers of post-traumatic cases with and without epilepsy, the chances of obtaining a normal electroencephalogram in the presence of epilepsy would be only 8 out of 53. *However, it must be recognized that a normal electroencephalogram does not exclude the possibility that a patient has brain damage or post-traumatic epilepsy.*

The foregoing should suffice to indicate the possibilities and limitations of electroencephalographic diagnosis in the chronic post-traumatic state. Since prognosis is a corollary of diagnosis, the degree and kind of predictive value that can be given to the electroencephalogram in this condition is also indicated.

#### SUMMARY AND CONCLUSIONS

The electroencephalograms of 175 cases of post-traumatic epilepsy and of 215 cases of head injury without epilepsy were compared. The group of head injury patients without epilepsy was subdivided into 113 cases of mild injury and 102 cases of severe injury. In all cases the electroencephalogram was taken three months or more after the injury so that only the chronic post-traumatic state was considered.

Comparisons were made between the electroencephalograms of these three post-traumatic groups, a group of 1,161 unselected epileptics and a group of 1,000 normal control subjects.

On the basis of differences between the five groups, the following conclusions are drawn with regard to the electroencephalogram in the chronic post-traumatic state:

1. Among patients with severe head injuries but no seizures, the incidence of abnormal electroencephalograms continues to decrease from three months to two years after injury.

2. Among post-traumatic epileptics, there is a relatively slight decrease in the incidence of abnormalities from three months to two years after injury.

3. Mild head injuries do not greatly increase the incidence of abnormal electroencephalograms above the level encountered in the normal control series.

4. In severe head injuries without seizures, the incidence of electroencephalographic abnormalities is more than twice as high as in the normal control group.

5. After head injury, children are slightly more likely to show abnormalities than adults. They are especially likely to show focal abnormalities.

6. Focal electroencephalographic abnormality is four times as common in post-traumatic epileptics as in unselected epileptics.

7. Focal electroencephalographic abnormality correlates with focal seizures. It strongly suggests localized brain damage.

8. Focal paroxysmal electroencephalograms, *i. e.*, those manifesting focal seizure-discharges, are twenty-one times as common among post-traumatic epileptics as among head injury patients without seizures.

9. Subjective complaints after head injury do not correlate significantly with electroencephalographic abnormalities.

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## POSTTRAUMATIC EPILEPSY<sup>1</sup>

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Epileptic seizures may be produced by many types of injury to the brain. The injury must affect in some way the cerebral gray matter, most often the cerebral cortex. Closed injury to the skull, regardless of its severity, rarely results in posttraumatic epilepsy. However, closed injury does occasionally have such an effect and then it is often possible to demonstrate, at operation, a localized area of contusion either at the site of the blow or at a distant point, often the opposite side. When such a lesion is exposed it will probably be found that the contused area has left a scar which is adherent to the dura.

Subdural hematomas very rarely produce habitual seizures, and if a hematoma exists in a posttraumatic epileptic the surgeon should not be satisfied to evacuate the chronic blood clot alone. He should also carry out an osteoplastic craniotomy to look for an associated meningocerebral scar resulting from contusion. This area may well be found under the hematoma.

The likelihood of epilepsy is greatly increased in case the dura has been penetrated and the brain lacerated by fragments of depressed bone or by a missile. This is apparently quite independent of the severity of the cerebral concussion and intracranial hemorrhage which may have attended the injury.

Healed brain abscess results in a high incidence of eventual habitual seizures, probably even higher than severe meningocerebral laceration.

Simple meningitis is not often followed by habitual seizures after the original infection is controlled. When, however, epilepsy does result the attacks seem to depend upon the fact that cortical gray matter has been de-

stroyed at the height of the infection by a thrombotic process in the superficial veins and arteries. Such areas leave scars adherent to the dura.

It is probable that, aside from meningitis, thrombophlebitis in the veins of the cortex, producing as it does superficial injury to gray matter, frequently results in the onset of habitual seizures. This may occur during the dehydration of the fevers of childhood. Positive diagnosis is difficult until and unless proven by later exploration in those cases where epilepsy develops.

Blockage of a cerebral artery due to embolus or simple thrombosis, which results in destruction of a part of the brain, may result in the eventual onset of seizures, although the incidence of epilepsy is considerably less than after cerebral laceration.

Diffuse increase of intracranial pressure, of itself, rarely if ever produces chronic seizures, although a sudden increase of pressure may produce a single attack. Thus, chronic internal hydrocephalus due to a block in the posterior fossa is not to be considered a cause of seizures.

All of these forms of injury, with the exception of hydrocephalus, may leave behind them a focus of abnormal spontaneous neuronal activity. This activity periodically results in an explosive spreading ganglionic discharge which is the cerebral counterpart of the fit. This is no longer a Jacksonian hypothesis. It is proven by electrographic recording. Inheritance of a tendency to fits, so far as my own observations go, seems to play little or no rôle in the probability of onset of attacks in such cases.

In the interest of possible radical therapy, we cannot leave it here; we must identify more definitely, not the gross lesion but the actual focus of neuronal hyper-irritability. Clearly this point does not lie in scar, in cyst, or in any area from which nerve cells are absent. It is usually to be found on the border of, and adjacent to, normal cortex. In the case of a large lesion of the brain where satisfactory electroencephalographic

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

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study of the exposed cortex has been possible and where the evidence given by post-operative results is also considered, the focus, in which electrographic spikes and sharp waves originate and which causes the attacks, has most often proved to be a small marginal gyrus, partly atrophied but containing functioning nerve cells.

I have presented evidence elsewhere<sup>2</sup> which suggests that the blood supply of such convolutions is adequate to preserve nerve cells from immediate destruction but inadequate for constant satisfactory oxygenation. It is a well known fact that certain degrees of anoxemia result in stimulation of ganglion cells. If these areas suffer from this form of chronic stimulation the individual carries about with him a sputtering fuse capable at any time of touching off the dreaded explosion.

The neurosurgeon who finds it necessary to operate upon a recent laceration of the brain should, therefore, remove by suction any gyrus that is partly destroyed. This technique leaves only gyri which are fully vascularized by their own proper pial vessels.

In the resultant scar tissue the number of extracerebral arteries which will eventually enter and anastomose with cerebral vessels is thus reduced. These vessels derived from the extracerebral vascular tree are subject to frequent active variations in calibre due to more effective sympathetic innervation. This is in contrast to the brain's own vessels which have a much less effective sympathetic innervation and are controlled almost altogether passively by the carbon dioxide content of the tissue and therefore by the functional demands of the cortex.

The depressed fracture, the meningocerebral laceration, the drained and healed ab-

scess, all tend to let in these ill-controlled extradural vessels, a fact that may well be related to the increased incidence of epilepsy in such cases as compared with other forms of cerebral injury.

On the other hand, in the treatment of posttraumatic epilepsy the principle to be followed in surgical excision of epileptogenic scars is as follows: Decide what abnormal convolution or convolutions are to be removed, together with cyst or connective tissue scar. Incise the pia at the summit of the convolution to be removed. Then with a small sucker aspirate that gyrus without injuring the pial mat which covers the adjacent gyrus, which is to be left. The floor of the resultant excised area is then formed of white matter, the walls of convolutions coated with pia and pial arteries. If this removal includes the actual irritated focus, subsequent electrograms (as pointed out by Dr. Jasper) will show that delta activity disappears rapidly and spike activity is absent and, what is more important, the attacks will stop.

Excision of normal appearing convolutions is almost certain to prove fruitless. Separation of adhesions alone is useless. Excision of a scar alone may also prove useless if the marginal focus is missed. When you have a true focus it is usually abnormal in gross appearance. Most often it is a narrow gyrus, tough in consistency. Sometimes it may be buried beneath the surface in a fissure and the only indication of its presence may be a dense whitening of the overlying arachnoid.

In general, those local brain injuries which result in meningocerebral scarring are most apt to produce epilepsy. Through such a scar anastomosis of extracerebral and intracerebral arteries occurs. The epileptogenic focus usually proves to be an atrophic neighboring convolution.

<sup>2</sup> Penfield, W., and Erickson, T. *Epilepsy and Cerebral Localization*, Thomas, 1941.

## EXPERIMENT IN POSTGRADUATE EDUCATION<sup>1</sup>

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In 1942 we(1) reviewed psychiatric education by reporting the work sponsored by the Council on Medical Education and Hospitals, special courses given by certain private psychiatric clinics, training programs organized by Massachusetts, New York, Pennsylvania, Maryland, Michigan, Ohio and Minnesota, and the newly organized postgraduate program of the Committee on Psychiatry in Medical Education of the American Psychiatric Association. At present all of these programs are considerably curtailed by the lack of teaching personnel.

The need for a more extensive organization of psychiatric education, which would supplement the work given by the states already noted, had been recognized for some time, but little was done until 1939 when the Committee on Psychiatry in Medical Education of the American Psychiatric Association sent a questionnaire to all state hospital superintendents inquiring whether they would be interested in supporting a postgraduate program designed to serve as an educational stimulus to their staff men and to aid them in meeting the requirements of the American Board of Psychiatry and Neurology. The response of the hospital superintendents in those states which did not already have organized postgraduate training was enthusiastically in favor of the program.

On the basis of these results, the Council of The American Psychiatric Association instructed the chairman of the Committee on Psychiatry in Medical Education to seek financial aid for the proposed program. The Rockefeller Foundation graciously made available a grant for six postgraduate institutes. Five of these institutes have been completed, but the sixth, scheduled at San Antonio in September, 1942, was cancelled because so many men interested in postgraduate training had been absorbed by the

armed forces. As reported earlier(2, 3), these institutes were held at Agnew, California, June 17-29, 1940; Lakeland, Kentucky, September 23-October 5, 1940; Columbia, South Carolina, April 14-26, 1941; Ft. Steilacoom, Washington, September 1-13, 1941; and St. Joseph, Missouri, March 23-April 4, 1942. Fig. 1 shows the areas from which each institute drew its attendance.

The first aim of the institutes was to offer a series of lectures which would serve as a general reorientation in the fields of psychiatry and neurology and would appeal to the men irrespective of their special interests. The second aim was to include such courses as would pave the way for a systematic review of the material covered in the examinations of the American Board of Psychiatry and Neurology. The third aim was to present a series of discussions on subjects of special interest and importance to hospital men. The hours devoted to all these courses and the number of times they were presented are shown in Table 1.

These institutes were attended by a total of 280 doctors as students for either a part or all of the two weeks, and the majority of those attending were engaged in state hospital work. By breaking the attendance down into successive institutes, we note a gradual increase in attendance: 41, 42, 56, 65, and 76. In addition, there were large numbers of workers in allied fields, such as nurses, social workers, and psychologists who attended for periods ranging from one or two lectures to a week or two. The census of these was difficult, but rough estimates gave their attendance by successive institutes as 85, 85, 155, 185, and 25. No fees or tuition of any kind was charged; those attending paid their own travelling and living expenses, though living quarters and board on the hospital grounds were provided for the first institute.

Seventy-five men presented courses, and this figure includes all those who gave even

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.



one lecture; the burden of the teaching was carried by 10 men. These instructors were drawn from many phases of psychiatry: 20 in private practice; 13 in government service; and 42 in medical school teaching.

A large number of books and pamphlets were available to the students throughout the institutes. Many of these were selections from the libraries of those who presented

At the conclusion of each institute, the committee solicited the members for their comments and criticisms in order to improve subsequent sessions. On the whole the comments were commendatory. Suggested changes in the program were of a minor nature.

Later, we sent questionnaires to the 280 physicians regularly enrolled as students and

## POST GRADUATE INSTITUTES *for* STATE HOSPITALS

*Sponsored by Committee on Psychiatry in Medical Education of the  
American Psychiatric Association  
FINANCED BY ROCKEFELLER FOUNDATION*

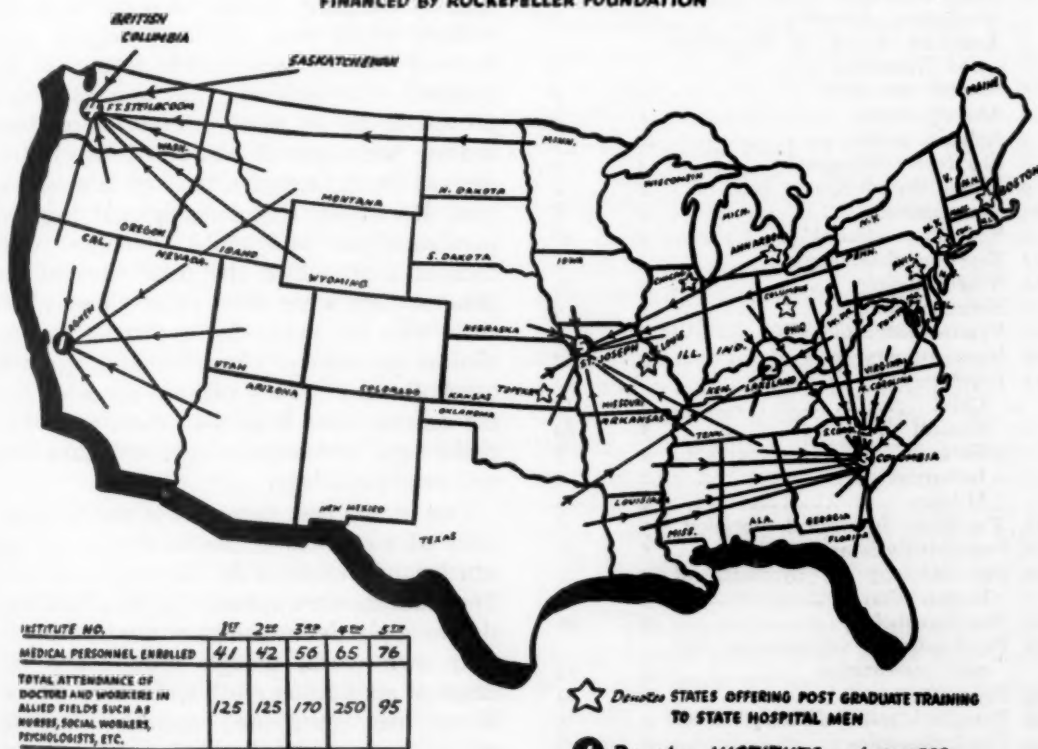


FIG. 1.

courses, but the greatest number was made available by the publishers. At the suggestion of some of the students, an outline of the material covered by the lectures was mimeographed and later distributed to those who had attended. With each succeeding institute this material grew, starting with 22 pages for the first and finally reaching 189 for the fifth. It was hoped that this material would serve as a guide around which each student could elaborate his own notes.

to the 75 physicians who presented lectures. Many of the members have since joined the armed forces, and a considerable number of their questionnaires was returned unclaimed. One hundred eighteen questionnaires were answered and returned by the students, and 51 by the teachers with the response being progressively greater from members of each succeeding institute. Even though less than half of the total questionnaires sent was returned, the answers are useful in evaluat-

ing the institutes; because of the variety of responses given, we feel that a larger number of returns would yield little more in the way of qualitative analyses. Although the questionnaires sent to the two groups of physicians were not the same, because they were designed to investigate the institutes from somewhat different viewpoints, for

out the institute. The opportunity afforded for review and refresher courses, both as related to the basic psychiatric sciences and to new developments in the field of psychiatry was thought to be the most worthwhile feature by many. Others stressed the value of personal contacts with men from other state hospitals and the association with recognized leaders in the field of psychiatry.

In order to study the appeal and suitability of the curriculum, inquiry was made as to the courses which were of the most interest and those which were the most helpful. Somewhat surprisingly, these were not necessarily the same, though in many cases the courses which were the most helpful were deemed the most worthwhile feature of the institute. In general, the courses which proved to be of most interest were those dealing with special phases of psychiatry, such as shock therapies, hospital administration, Rorschach technique, mental hygiene, psychoanalysis and child guidance. The courses from which the men received the greatest help were most often those which dealt with the every day problems such as clinical psychiatry, clinical neurology, and psychotherapy. Many persons reported that the courses most helpful to them were psychobiology, psychopathology, neuroanatomy and neuropathology.

One of the best measures of the practicality of a curriculum lies in the application which can be made of the material presented. The students were agreed that they had been able to apply the teachings of the institute to their own work, though some found the range of application much wider than others. Many men mentioned specific ways in which the material covered had continued to help them upon returning to work; others stated that their standards had been raised and morale bolstered through attendance at the institute.

2. *Quality of Teaching.*—Since the quality of the teaching has an important bearing on the success of the institute both at the time of its being held and later, the committee was especially interested in investigating this aspect of the institutes. In response to the inquiry as to the adequacy of the teaching, the students replied almost overwhelmingly in the affirmative. Some men noted

TABLE 1

## SUBJECTS PRESENTED AT THE FIVE INSTITUTES

| Subjects                                                    | Times presented | Total hours |
|-------------------------------------------------------------|-----------------|-------------|
| 1. Administration and organization.                         | 5               | 20          |
| 2. Aged, treatment of the.....                              | 1               | 1           |
| 3. Alcoholism, dynamics of.....                             | 1               | 2           |
| 4. American Board of Psychiatry and Neurology .....         | 2               | 2           |
| 5. Amytal interview .....                                   | 2               | 2           |
| 6. Anxiety states .....                                     | 1               | 1           |
| 7. Aphasia, movies on.....                                  | 2               | 2           |
| 8. Electroencephalography .....                             | 4               | 4           |
| 9. Mental disorders, new facts on..                         | 2               | 2           |
| 10. Neuroanatomy .....                                      | 4               | 8           |
| 11. Neurology, clinical .....                               | 5               | 48          |
| 12. Neuro-ophthalmology .....                               | 5               | 5           |
| 13. Neuropathology .....                                    | 5               | 50          |
| 14. Neurophysiology .....                                   | 3               | 9           |
| 15. Neuro-roentgenology .....                               | 5               | 6           |
| 16. Neuro-surgery .....                                     | 3               | 4           |
| 17. Psychiatry:                                             |                 |             |
| Child .....                                                 | 5               | 15          |
| Clinical .....                                              | 5               | 84          |
| Forensic .....                                              | 4               | 7           |
| Industrial .....                                            | 2               | 4           |
| Military .....                                              | 4               | 5           |
| 18. Psychiatry in medical education.                        | 5               | 6           |
| 19. Psychoanalysis and psychiatry...                        | 5               | 10          |
| 20. Psychobiology or dynamics of human behavior .....       | 5               | 20          |
| 21. Psychopathology .....                                   | 5               | 26          |
| 22. Psychosomatic relationships and case presentation ..... | 4               | 10          |
| 23. Psychotherapy .....                                     | 4               | 24          |
| 24. Rorschach test and interpretation                       | 3               | 5           |
| 25. Shock therapies .....                                   | 5               | 8           |
| 26. Syphilis, C. N. S.....                                  | 4               | 4           |
| 27. Sociology and psychology as related to psychiatry.....  | 1               | 4           |
| 28. Vigotsky test .....                                     | 1               | 1           |

purposes of the following discussion we have grouped related responses together:

1. *Value of Institutes to the Student.*—In response to the inquiry as to the most worthwhile feature of the institute, many students mentioned lectures by specific persons. In almost all cases these lectures were on one of the major subjects and were given by an instructor who taught through-

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that certain instructors were much better teachers than others; that the presentations of local speakers were more likely to be variable than those of selected teachers from the outside; that demonstrations should be used more extensively.

As a further check on the quality of the teaching, the instructors were asked whether they were satisfied with the material which they gave. The answers indicated a more severely critical attitude than was evidenced by the students. About half of those responding stated that they were not satisfied with the material which they gave; one man stated that he was never satisfied with his lectures. Even those who felt that their material was satisfactory modified their statements by such qualifications as "moderately," "fairly so," "could be improved."

The teachers were also asked their opinion of the questions and discussions which followed the lectures and demonstrations. Many views were expressed, ranging from such descriptions as "illuminating," "critical," "provocative" to "inadequate" and "discussion missed my main point." Some of the teachers responding noted that the questions and discussion indicated an intelligent interest and an eagerness to learn on the part of the audience, but several felt that too few questions were asked and there was too little discussion.

Since the adequacy of the teaching may be related to the amount of time allotted a subject, both students and teachers were queried on this matter. Many students responded that they would have liked more time for the subjects in which they were the most interested, but they realized that this was impossible within the limits of the institute and that a longer institute would have been impracticable. About a third of the teachers felt that they did not have sufficient time for the adequate treatment of their subject, but several of those stated that more time could not be made available in institutes of two weeks, and they did not favor lengthening the period. Even a number of those who felt that enough time was given to a subject qualified their statements by noting that it was sufficient considering the total length of the institute.

3. *Permanence.*—The question naturally

arose in the minds of the committee as well as attending students and teachers as to the possible permanence of these institutes in the field of postgraduate psychiatric education. Accordingly, the students were asked whether they would like to attend another such group of lectures, and the teachers whether they would be willing to teach the same subjects if called upon at a later date. Practically the entire group of students expressed their desire for additional institutes. All of the teachers stated their willingness to teach again. However, a number of students and teachers noted that attendance at institutes was impossible for the duration. Many students suggested that these institutes should be held regularly, especially in those parts of the country somewhat removed from psychiatric training centers. Only three of the teachers felt that the institutes should not have a permanent place in postgraduate psychiatric education.

4. *Suggested Changes.*—No parts of the questionnaires are so difficult to evaluate as are those which deal with suggested changes. Both the students and the teachers were asked what courses they would eliminate or add, and what changes in organization or method could be made to improve the institutes. In addition, both were requested to make any additional comments or criticisms which they wished. The responses to these questions were many and varied. Perhaps the most significant thing about them is that there is no one general criticism or request. The suggestions for adding and eliminating courses are as varied as the men themselves and seem to represent their special interests. Each request that a subject be dropped is matched by one that it be augmented, at least in the "minor" fields, and this is true of both students and teachers. In general, there were three or four times as many requests for the addition of courses as for the elimination of courses.

The suggestions from the students and teachers for changes in organization or method are likewise varied and often opposing.

The general criticisms and comments by students and teachers were almost all commendatory. For example, students noted that the institutes were well-organized, in-



teresting, inspirational, comprehensive, and of great value in solving the problem of advanced study for institutional physicians. The teachers commented that the institutes were well-organized, efficiently conducted, comprehensive, practical, valuable in providing review and refresher courses, and worthy of a permanent place in psychiatric education.

### DISCUSSION

In all the variety of suggestions and criticisms, there were two or three of special value which should be considered in planning future institutes. First of all, a number of teachers and students commented that the students should take a much more active part in the institutes. Several ways were suggested in which this might be done: through examination of cases, round table discussion, seminar presentation, questions and discussion participation, demonstrations, and individual reports from the students. Second, the number of courses presented within the fields of neurology and psychiatry was criticised by some on the basis that it led to confusion and distraction, or that it took time away from the major presentations, or that it resulted in some overlapping and duplication of courses. Third, a significant number of both students and teachers stated that in their opinion the institutes would be strengthened if more time were given to the practical clinical aspects of cases, such as diagnostic techniques, treatment procedures and the essential steps in the management of patients.

A relatively simple reorganization of the teaching was suggested which might strengthen the curriculum and meet in part the challenge represented in the criticisms. Under this scheme the major subjects would continue to be presented throughout the institute by two or three carefully selected teachers. Somewhat greater emphasis upon

treatment procedures and clinical presentations might well be given, and more attention given to avoiding duplication. The minor subjects within the fields of neurology and psychiatry would be presented through organized seminars or round table discussion groups. In this way, only those especially interested in these subjects would meet together, and a much greater degree of student participation would be assured.

Aside from these suggested changes, it seems that the general structure of the institutes and the relative distribution of courses are as satisfactory as a project of this kind can be made. While one student would like more of one subject and another student more of a different one, the very variety of requests makes any attempt to include all of the changes impossible. The best procedure seems to be to present a curriculum in which most of the time is given to the fundamentals of psychiatry and neurology but in which enough time is allotted to the specialties to provide selection and variety. As far as the length of the institute is concerned, it is evident that a longer period is impracticable and a shorter is inadvisable.

While we recognize that these programs must be curtailed for the present, the enthusiastic response which they were accorded by both students and teachers and the recognized need for wider postgraduate opportunities in psychiatry and neurology make it evident that these institutes in some form should be continued.

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## HISTORICAL SIDELIGHTS ON THE PROBLEM OF DELINQUENCY<sup>1</sup>

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For many centuries the problem of crime and delinquency has been considered by many authorities a problem of law and of formal, postulative justice. The law and society have always been more interested in getting rid of the delinquent than in understanding, reforming, and curing him. Even today the inner contradiction between the premises of penal law and the evergrowing understanding of human psychology is fundamental and well-nigh irreconcilable.

Quite recently I was faced with the task of pleading to a jury in the State of West Virginia, trying to convince them that the defendant, a boy of fourteen, was mentally ill. That the boy should be treated by a competent psychiatrist instead of punished appeared rather strange to the prosecuting attorney. In the usual trite, cold, so convinced but so unconvincing terms of legal formalism, he insisted that the boy was a murderer, that he had killed a woman with malice aforethought, and that the State, the public and civilization itself demanded that justice be done. In accordance with the statutes, justice in this case was hanging by the neck. The prosecutor was willing to yield to some vague humanitarian impulse and agreed that the boy should be sent to the penitentiary for life instead of to the gallows. Reason? The boy was perhaps too young to die—but he did not appear too young to be buried alive under the tombstone of formal justice, without a chance for re-education or future rehabilitation.

West Virginia is of course not the only state in the Union whose laws are so refractory and truculent, and the United States is not the only country in this respect.

Making full allowance for the great strides made by penal institutions the world over during the past century, we cannot help but still be aware of the fact that the spirit and tradition of the law are punitive and revengeful. Great legal minds and so-

ciologists have recognized this fact and even regretted this state of the law. G. H. Mead was fully aware of it.<sup>2</sup> Roscoe Pound saw clearly the need of broadening "The scope and purpose of sociological jurisprudence."<sup>3</sup> Yet it cannot be gainsaid that the written law is the most refractory conservative institution of our civilization, and that whatever changes of penal laws are recorded in history were brought about after hard and at times even bloody battles which lasted for many years, at times for many generations. It took almost three hundred years before the European penal codes abolished the principle of burning at the stake for alleged sorcery.

The attitude of the law toward juvenile offenders and the classification of the offenses themselves have changed considerably in the course of the past two or three centuries, but it is very interesting to observe how slow the law was in its response to the changing tide of human understanding.

In the Criminal Code of the Province of East Jersey, as of the year 1688, we can find that "a child convicted of assaulting or cursing his parents or of persistent disobedience or subornness was to be hanged."<sup>4</sup>

In England, whence the tradition of our own criminal code comes, a boy of fourteen was convicted in 1819 to "seven years of transportation" for stealing a cotton gown worth two shillings. In 1821 a thirteen-year-old girl was sentenced to six months' imprisonment for stealing a hat, and two boys of eleven and thirteen respectively were convicted to death for stealing seventeen shillings. Both in England and in the United States the lowest limit of punishability was the arbitrary age of seven.

The attitude of the judiciary was well

<sup>2</sup> G. H. Mead: *The psychology of punitive justice*. American Journal of Sociology, March, 1918.

<sup>3</sup> Harvard Law Review, December, 1911, and April, 1912.

<sup>4</sup> Henry W. Thurston: *Concerning Juvenile Delinquency*. New York, Columbia University Press, 1942, p. 69.

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

pointed out by Thurston, who related how a Chicago criminal court shortly before 1900 committed a boy to the superintendent of an institution for delinquents. The commitment papers stated that the child had "burglariously, feloniously, and maliciously broken into his step-mother's pantry and stolen a jar of jam."<sup>5</sup>

We may recall in passing that the criminal courts of England of one hundred and twenty-five years ago reflected but an old tradition which could be traced back to the days when children of ten used to be burned for witchcraft<sup>6</sup> on the continent of Europe, and even further back to ancient Greece and Rome. There was good reason for one of the early fathers of the Church, Tertullian, to exclaim, "How many do you suppose of those standing about and panting for the blood of Christians, if I should put it to them before their very conscience, would deny that they killed their own children?"<sup>7</sup>

This cruelty toward children, which unconsciously is ever present in all adults, has not always been unconscious; at one time it stood out and showed its effect in the open, finding its way into the respectable and pompous paragraphs of penal codes. In the times of Nero beggars would gather abandoned and exposed children and either bring them up as prostitutes or maim them to be used as exhibits for arousing pity and loosening the purse-strings of the passers-by. "I should like to know," cried Seneca, "that workshop of human misfortunes—those shambles of infants!"<sup>8</sup>

The problem of abandoned, homeless children is thousands of years old, and it would be a mistake to think that all such children were victims merely of unfortunate accidents. Even legitimate parents would frequently abandon their own offspring. In the first asylum for destitute children, founded by Emperor Trajan (110 A.D.) and accommodating five thousand children, there was

but one illegitimate child to every hundred and fifty legitimate ones.

The law was slow to recognize the state's responsibility for the welfare and the future of the child. Common law, the courts of chancery or equity had to evolve an appropriate legal philosophy first. Thus, sixteen and one-half centuries after Emperor Trajan, we find Lord Jekyll rendering a decision in the case of *Eyre v. Shaftsbury* in 1772, saying: "The care of all infants is lodged in the king as *parens patriæ*, and by the king this care is delegated to his Court of Chancery. Idiots and lunatics who are incapable of taking care of themselves, are provided for by the king as *parens patriæ*, and there is some reason to extend this care to infants."<sup>9</sup>

These humanitarian trends of the state, slow as they were in their development, did nevertheless develop more rapidly in relation to destitute children than in relation to juvenile delinquents. It was not until the first quarter of the nineteenth century that the state recalled that even the old Roman law was on occasion more lenient to *minores* and *impuberes*, and that a delinquent might be entitled to care and education. The first reformatory in the United States was opened in 1823. It was called the House of Refuge and was "to combine together the advantages of a prison, manufactory and school." A similar institution was opened in Pennsylvania in 1828, and in Massachusetts in 1847. There were ten thousand vagrant children in New York alone in that latter year. The New York Juvenile Asylum opened in 1851. The Children's Aid Society of New York was founded two years later (1853).

That destitution, homelessness and general lack of parental and social care are intimately connected with the development of criminality, and that prevention and proper re-education are more important than punishment, was not at first clear. As seen from the few illustrations cited above, it was not the legal mind that could conceive of abolishing punishment and of espousing the cause of prevention and re-education. The very conception of preventive and curative

<sup>5</sup> *Idem*.

<sup>6</sup> Rev. Montague Summers: "Introduction" to his translation of *Malleus Maleficarum*. Great Britain, John Rodker, 1928, xix.

<sup>7</sup> Quoted by Charles Loring Brace: *The Dangerous Classes of New York and Twenty Years' Work among Them*. New York, 1872, p. 17.

<sup>8</sup> *Idem*.

<sup>9</sup> Cf. Herbert H. Lou: *Juvenile Courts in the United States*. Chapel Hill, University of North Carolina Press, 1927, p. 3.

measures in relation to delinquency was foreign to the law; we must admit that for many centuries it was also foreign to the medical mind. Neither to legal philosophy nor to medical psychology belongs the honor of being sagacious and humanistic enough to perceive that society, its structure and tradition, may be responsible for much that is evil in man, that the human mind is not a static phenomenon, that each individual, while being an evil doer, may be and actually is afflicted with that evil which makes him its own instrument.

The deepening respect for the value of the individual, which the American and French Revolutions spread all over the civilized world, was combined with the growth of the Industrial Revolution, which created so much wealth and so much poverty. A new class of destitutes sprang up; at the same time a profound sense of social responsibility for man as a whole and for the less privileged of the new industrial society was awakened in the minds and the hearts of those whose personalities and religious faith were attuned to the potentialities and misfortunes of the underprivileged citizens of the new society.

There are many points of similarity between the mood and trend of the leaders of the first half, or rather the 'thirties, of the nineteenth century and the mood and trend of the humanistic leaders of thought of almost exactly three hundred years before, as represented by Thomas More and Vives in England and on the Continent.

In America, the voices of these men were particularly poignant and especially effective and fruitful. Among these voices that of Edward Livingston should be especially noted. In 1833 he wrote his *Introductory Report to the Code of Reform and Prison Discipline*. Said Edward Livingston: "As prevention in the diseases of the body is less painful, less expensive, and more efficacious than the most skillful cure, so in the moral maladies of society, to arrest the vicious before the profligacy assumes the shape of crime; to take away from the poor the cause or pretence of relieving themselves by fraud or theft; to reform them by education and make their own industry contribute to their support, although difficult and

expensive, will be found more effectual in the suppression of offences and more economical than the best organized system of punishment."

The great pioneer Charles Loring Brace, a younger contemporary of Livingston, opened the introduction to his *The Dangerous Classes of New York*, first published in 1872, with the passage from Livingston just quoted. The first chapter of Brace's book bears the title "Christ in Charity and Reform." It is thus quite evident that the spirit of reform and psychological understanding of the delinquent which pervades modern psychiatry owes a great deal to the humanists of a little over one century ago, who originated the inspired and persistent drive to change some of our penal codes and to reform our penal institutions. We owe that generation as much as psychiatry owes its foundation and trend to the humanists of the sixteenth century, who provided the impetus for the formation of clinical psychopathology.

The 'thirties and the 'forties of the past century marked the great awakening as well as the first solid steps in the direction of reform. Those were decades of true transition. As late as 1833, the year when Edward Livingston wrote his famous report, a child of nine who broke a window pane and stole two-penny worth of paint was tried and sentenced to death in England. Some fourteen years later, the English Juvenile Offenders' Act (1847) attempted to give juridical recognition to the principle that juvenile delinquents should be given especial consideration.

A somewhat pedantic attitude toward the history of this problem might lead us to recall that as early as the tenth century the Saxon King Athelstane "not only attempted the reformation of juvenile offenders but enacted a certain law which embodied some of the germs of modern juvenile-court legislation, and especially of probation."<sup>10</sup> King Athelstane's beginnings are as interesting and as admirable as those of Emperor Trajan eight centuries before—but also just as inefficacious as far as the true history of juvenile delinquency, of penal

<sup>10</sup> Cf. W. H. S. Garnett: *Children and the Law*. London, 1911. Referred to by Lou: *op. cit.*, p. 13.



reform, of juvenile courts, and the institution of probation are concerned. We must recall the instructive fact that the penal law and its representatives are singularly persistent in the simplicity of their argumentation. Just as today the law is afraid to relent in its punitive intent in relation to adult offenders, lest this be license to further transgression, so it was in the days before the fiction of legal responsibility extended over children below the age of seven. Garnett<sup>11</sup> tells of a boy of ten who in the eighteenth century was condemned to death for murder. "All the judges agreed to the imposition of this penalty because the sparing of this boy simply on account of his tender years might be of dangerous consequence to the public by propagating a notion that children might commit such atrocious crimes with impunity." The social history of the world had not awakened, its conscience had not ripened, and its psychological curiosity was not emboldened until after the first quarter of the nineteenth century.

As early as 1830 some defendants had already been placed on probation by the Boston courts. But it was in 1841 that John Augustus (1785-1859), a Boston shoemaker, appeared in a Boston police court and convinced the judge that he would and could take care of the defendant, a drunkard. The judge ruled that one cent of fine and costs must be paid. Augustus paid the \$3.76 and took the defendant into his own home. The ways of justice being slow however, the first probation law anywhere in the world was not passed until thirty-seven years later. The honor belongs to the Commonwealth of Massachusetts, which by the Act of 1878 (Chapter 198) made probation a part of the function of penal justice.

During the six or seven decades which followed the efforts of Edward Livingston and John Augustus, America led the world—as it still does—in efforts for penal reform. The pioneer work of Charles Loring Brace, who lived and worked with thousands of destitute and vagrant boys of New York City, has already been mentioned. The 'seventies and the 'eighties were eventful and fruitful years. In 1869 an officer of the

State Board of Charities was always present in the Massachusetts courts when juvenile cases were tried. In 1870, in Suffolk County, the trials of juvenile cases were separated from the general trials of offenders. In 1872 special trial justices dealt with the cases of juvenile offenders. In 1877 we hear for the first time of "sessions of juvenile offenders"—it is worth noting here that as early as 1862 separate trials for young offenders were held in Switzerland. In Pennsylvania, from 1872 on, offenders under the age of fourteen were freed from penal prosecution.

Finally, the first juvenile court in the history of penal justice was established in Chicago, in 1899. The story of this revolution in the annals of penal justice is replete with great events and studded with names which deserve to remain permanent in the history of humanism; such a history would require and deserves a special and exhaustive study. Suffice it here to say that the nineteenth century closed with an epoch-making effort which soon spread its influence all over the world, the old and the new. This American contribution to true justice cannot be overestimated, as it is impossible to avoid reiterating that we owe this original contribution neither to the tradition of the law nor to that of medicine; it was initiated by charity organizations, by the societies for the prevention of cruelty to children, by enlightened and inspired individuals. In other words, it was society itself that imposed its demand upon the antiquated law and impressed its need on psychological medicine, which did not come into its own in this field until the twentieth century. This is a matter of contemporary history.

It should be recorded that the changes produced by the establishment of juvenile courts were revolutionary in the true sense of the word. The old legal tradition still stood askance before this revolution and wondered whether some age-long foundation had not been regrettably shattered. Technicalities and legal niceties were brought into play to test the validity of the revolution. But life itself gave such a potent answer to the skeptical queries that the courts had to be convinced. This change in the legal mind is typified by an opinion rendered by the

<sup>11</sup> Quoted by Lou: *op. cit.*, pp. 13, 14.



Supreme Court of the State of Pennsylvania in 1905, which reads in part: "To save a child from becoming a criminal, or from continuing in a career of crime, to end in maturer years in public punishment and disgrace, the legislature surely may provide for the salvation of such a child, if its parents or guardian be unable or unwilling to do so, by bringing it into one of the courts of the state without any process at all, for the purpose of subjecting it to the state's guardianship and protection. . . . When the child

gets there and the court, with the power to save it, determines on its salvation and not its punishment, it is immaterial how it got there."<sup>12</sup>

The old theory that the state is *parens patriæ* and the tradition of the Court of Chancery thus was expanded and beautifully adapted to modern conditions, to the non-lamented detriment of formal and antiquated justice.

<sup>12</sup> Quoted by Lou: *op. cit.*, p. 11.

## A PSYCHIATRIC STUDY OF 250 SEX OFFENDERS<sup>1</sup>

BENJAMIN APFELBERG, M. D., CARL SUGAR, M. D., AND ARNOLD Z. PFEFFER, M. D.

### INTRODUCTION

The problem of the sex offender is of practical interest from two principal angles: first, and by far the more important, the protection of society; second, the treatment of the sex offender himself.

In our society, the only acceptable forms of sexual activity in conformity with cultural, social and legal restrictions are of course well understood. All other forms of sexual activity are condemned, some more than others. Of these, the so-called perversions most often give rise to a burdensome and precarious mode of existence for the sexual pervert because of psychic conflict, legal penalties and social condemnation and ostracism. Because children have often been the sexual objects of perverts, the community has demanded swift and severe punishment for such offenders. This attitude has unfortunately extended to all types of sex offenders, even when little or no injury has been caused to society.

It is desirable that the public should know that many of these sex offenders are not vicious and are amenable to psychiatric treatment and social rehabilitation. They are frequently the product of abnormal environmental situations, particularly in the family, or originate from broken homes; and careful social investigation and psychiatric examination and treatment are essential in dealing with such cases. Punishment alone is a wasteful and useless procedure.

In this study the psychological factors in sexual abnormalities and the personality types observed among sex offenders are discussed. It has not been our intention to consider possible deeper psychodynamic factors, but rather to stress various statistical, social, psychiatric and legal aspects of the problem.

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

From the Psychiatric Division, Bellevue Hospital, New York City, S. Bernard Wortis, M. D., Director, and the Department of Psychiatry, New York University College of Medicine.

The material for this study was obtained by analyzing the clinical records of 250 non-psychotic male sex offenders who were examined in the psychiatric division of Bellevue Hospital. These were consecutive admissions between October 1, 1941, and November 1, 1942, and represented convicted offenders transferred from various New York City correctional institutions for psychiatric examination either prior to expiration of the allotted sentence or as a prerequisite for parole consideration by the New York City Parole Commission. Of these, 242 were serving sentences for sex offenses and 8 were serving sentences for other crimes, as burglary, petit larceny, etc., but had criminal records or institutional behavior which showed abnormal sexual tendencies. These 8, therefore, were included for psychiatric study in accordance with the mayor's order requiring that all sex offenders undergo psychiatric observation prior to release from any of the city correctional institutions. However, the information regarding their sex offenses was so meager that these 8 cases were not included in the statistical part of this survey.

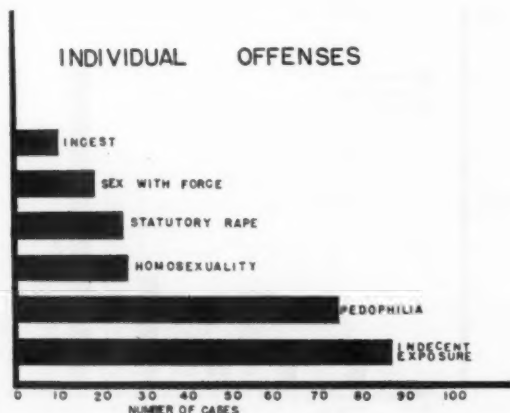
The sexual offenses included such charges as disorderly conduct, indecent exposure, impairing the morals of minors, endangering the health and morals of a minor, assault, attempted rape, homosexuality and sodomy. These are all named according to the classification in the Penal Code of the State of New York. These sex offenders had been sentenced by various criminal courts in the five counties of New York City, among them the Magistrates' Courts and Special Sessions, which deal with misdemeanors, and the higher criminal courts such as General Sessions and the County Courts which have jurisdiction over felony charges. Sentences varied from thirty days in the workhouse to periods up to three years, which is the maximum penitentiary term.

### SOCIOLOGICAL ASPECT

For the purpose of our study we found the Penal Code definition of the various sex

offenses inadequate. Thus, the charge of impairing the morals of a minor was often made when the offense consisted of exhibitionism before a minor. Perverted sexual acts such as sodomy on minors or sexual intercourse between adults in view of children resulted in charges of impairing the morals of minors in accordance with the Penal Code. We have classified our cases with regard to type of offense in the following six groups:

- I. Incest.
- II. Sex relations associated with force. Sexual intercourse with a female capable of the act according to the legal definition, but against her will, following threat, duress or assault.



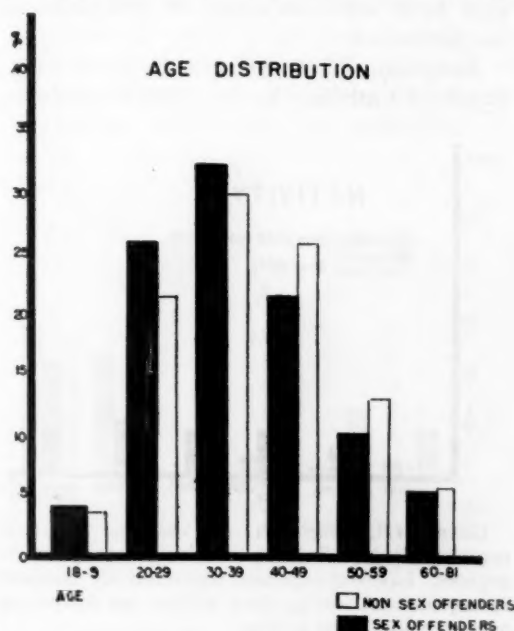
GRAPH I.—Distribution of offenses: Indecent exposure, the most frequent offense, was noted in 88 cases, representing over  $\frac{1}{3}$  of the entire series. The pedophilia and indecent exposure cases incorporated approximately  $\frac{2}{3}$  of the entire group, while the remaining four groups constituted  $\frac{1}{3}$  of the total.

- III. Statutory rape. (Rape, second degree, New York Penal Code, section 2010.) This group includes all cases of intercourse with the consent of a female, under 18 years of age, who is able to perform the act.
- IV. Homosexuality.
- V. Pedophilia. This group included all cases of sexual offenses against children under 14 years of age. We feel that sexual offenses against girls beyond puberty are more closely related psychologically to adult heterosexual activities, and therefore do not fundamentally demonstrate genuine pedophilic tendencies.
- VI. Indecent exposure, or exhibitionism.

*Offense* (Graph 1).—In our series we found 25 cases of statutory rape as against 10 cases of incest and 18 cases of rape asso-

ciated with force. Homosexuality was the offense in 26 cases, pedophilia in 75 cases, and indecent exposure, the most frequent offense, was noted in 88 cases, representing over one-third of the series. The pedophilia and indecent exposure cases accounted approximately for two-thirds of the entire group.

*Ages* (Graph 2).—We found that statutory rape was most common in the younger age groups, with 17 out of 25 cases occurring between the ages of 20 and 39,



GRAPH II.—Age distribution: Taken as a group, without regard for individual offenses, there was no difference between the age distribution of sex offenders as compared with a large group of non-sexual offender inmates of the same institution.

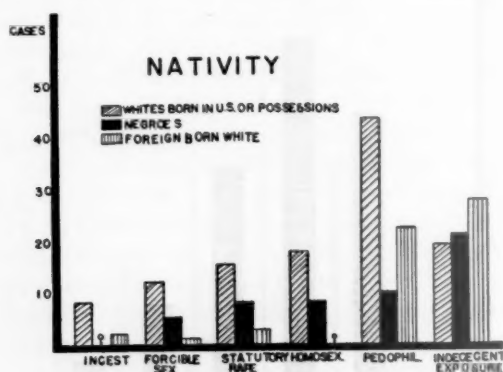
while pedophilia was most common in the older group, ranging from 39 to 49, in which there were 41 cases out of 75. In the indecent exposure group, the largest number of cases, amounting to 32, was found in the 30-39 year age range, while in the 20-29 year range there were 24 cases, and in the 40-49 year level 21 cases.

*Race*.—One hundred and eighty seven (77.3%) were white and fifty-three (22.7%) were Negro. This represents a greater incidence among Negro sex offenders than would be anticipated from the ratio of the Negro to the white population

in the city of New York, which is known to be 12%.

**Nativity** (Graph 3).—Fifty-six offenders (23%) were foreign born, while 186 (77%) were born in the United States. This represents a smaller percentage of foreign born amongst the sex offenders than would be expected on the basis of their ratio to the native born population in New York City where the foreign born constitute about one-third of the population. It is of interest to note that 50 out of the 56 offenders of foreign birth were convicted of pedophilia or exhibitionism.

**Religion.**—The group included 133 (55.8%) Catholics, 82 (34.6%) Protestants,



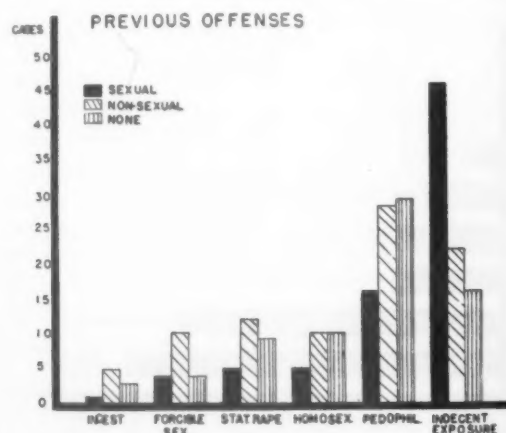
GRAPH III.—Nativity: No cases of incest in negroes. Pedophilia was relatively infrequent in negroes. Indecent exposure was relatively frequent in negroes and foreign born whites, but infrequent among native born whites.

and 21 (8.8%) Hebrews. We had no information as to the religious affiliation of 6 offenders.

**Education.**—Sixty-two (25%) had completed 8 grades of schooling. Of these 13 completed four years of high school and 9 had attended college. Of the remaining 180 cases, 166 (68.6%) had less than 8 grades of schooling, 4 (1.7%) had attended ungraded school and 10 (4.1%) had no schooling whatsoever. It may be of interest to note that none of the offenders guilty of incest had completed 8 grades of elementary school. On the other hand, in the group of exhibitionists we found 3 who had some college education, and 21 (25%) who had completed 8 grades. In the statutory rape group we found 9 out of 25 (36%) who had more than 8 grades of schooling.

**Marital Status.**—Only 64 (26%) were married and living with their wives while 109 (44%) were single. The remainder were either divorced, separated or widowed.

**Previous Offenses** (Graph 4).—Seventy-seven (32%) had been charged with sex offenses in the past. This was especially prominent in the exhibitionist group, 46 cases having been charged previously with one or more sex offenses. Eighty-seven (36%) of the offenders had been charged previously with non-sex offenses. Only 78 (32%) had no past criminal record. These findings vary from those of Frosch and Bromberg who found only 15% recidivism



GRAPH IV.—Previous offenses: More than half of the exhibitionists had committed previous sex offenses.

in sexual offenses. The differences may be due partly to the fact that their study did not include cases of exhibitionism, which constitute the majority of recidivists in this study.

The Citizens' Committee on the Control of Crime in New York City found, in a study of 2022 sex offenses in New York City in 1937-8, that the peak in rape cases was in the 21-25 year age group as contrasted with other sex offenses in which the peak occurred in the 55 year or older age group. Seventy-two per cent of the 2022 cases gave the United States as the place of their birth and the remaining 28% gave their countries of birth, Italy, Puerto Rico, Russia and Germany in that order of decreasing frequency. Nineteen per cent of the defendants belonged to the Negro race.



Recidivism was not frequent. Only 17% had records of previous arrests. Of these, 85 or about 4% had records of prior sex offenses.

*Rôle of Alcohol* (Table 1).—Kort, in the Psychiatric Clinic in Heidelberg, found

TABLE 1

## ALCOHOLISM

| Type of Offense | I  | II | III | IV | V  | VI | Total | Per cent |
|-----------------|----|----|-----|----|----|----|-------|----------|
| Excessive ..    | 5  | 4  | 3   | 4  | 9  | 19 | 44    | 18.2     |
| Moderate ..     | 0  | 5  | 2   | 10 | 11 | 18 | 46    | 19.1     |
| Denied ....     | 2  | 6  | 6   | 0  | 22 | 25 | 61    | 25.2     |
| Occasional .    | 3  | 3  | 9   | 8  | 24 | 19 | 66    | 27.2     |
| Unknown ..      | .. | .. | 5   | 4  | 9  | 7  | 25    | 10.3     |
| Total ..        | 10 | 18 | 25  | 26 | 75 | 88 | 242   | 100.0    |

about 25% of the 242 sex offenders studied

sional drinking. Among the offenders charged with homosexuality 15 out of 25 (40%) were excessive or moderate drinkers.

## PSYCHOPATHOLOGY

For the convenience of our study, the sexual offenses may be separated into two groups which are, however, related in their underlying psychopathology. The first group of offenses, like homosexuality or pedophilia, involve the performance of a sexual act which is inherently abnormal in regard either to choice of object or the goal desired. The second group of offenses, like rape and seduction, involve a physiologically normal sexual act under antisocial conditions.

TABLE 2

## PSYCHIATRIC DIAGNOSES

| Type of offense                                            | I  | II | III | IV | V  | VI | Total |
|------------------------------------------------------------|----|----|-----|----|----|----|-------|
| 1. Psychopathic personality ..                             | .. | 10 | 10  | 3  | 13 | 5  | 41    |
| 2. Psychopathic personality with pathological sexuality .. | 1  | 4  | ..  | 21 | 19 | 42 | 87    |
| 3. Alcoholism ..                                           | 6  | 2  | 2   | .. | 6  | 15 | 31    |
| 4. Schizoid personalities ..                               | 3  | .. | 4   | .. | 9  | 5  | 21    |
| 5. Neurotic traits ..                                      | .. | .. | ..  | .. | .. | 3  | 3     |
| 6. Cerebral arteriosclerosis ..                            | .. | .. | ..  | .. | .. | 1  | 1     |
| 7. Senility ..                                             | .. | .. | ..  | .. | 3  | .. | 3     |
| 8. Neurosyphilis ..                                        | .. | .. | ..  | .. | 1  | .. | 1     |
| 9. Post-encephalitic Parkinsonism ..                       | .. | .. | ..  | .. | .. | 1  | 1     |
| 10. No abnormalities ..                                    | .. | 2  | 9   | 2  | 23 | 17 | 53    |
| Total ..                                                   | 10 | 18 | 25  | 26 | 75 | 88 | 242   |

were addicted to alcohol. Among 90 offenders studied by Leppmann, over  $\frac{1}{3}$  (38 cases) admitted alcoholism. East, after comparing statistically the number of convictions for exhibitionism in England and Wales in 1913 with the number occurring in 1922-23, is of the opinion that the decline in the number was due to a decrease of alcohol consumption. He adds, however, that the exact extent to which alcohol plays a rôle is difficult to evaluate, since frequently an offender will claim that he was under the influence of alcohol at the time of the offense as a mode of self-defense or as a rationalization in explaining his conduct.

In the present study we found that only 61 (25%) offenders denied the use of alcohol, as compared to 91 (39%) who admitted using alcohol excessively or moderately. Sixty-six offenders (27%) admitted occa-

*Exhibitionism.*—Sexual satisfaction by exposing the genitalia to a member of the opposite sex who is shocked by the act.

As Noyes points out, the offender is often found to be suffering from feelings of inferiority, inadequacy and impotence, and by exhibiting his genitalia to a woman he is attempting to demonstrate vicariously his masculinity and potency. Several offenders in our series freely expressed ideas of this kind. Thus, one stated spontaneously that he obtained sexual satisfaction by exposing the genitalia to a woman only when he accompanied the act with the question whether she had ever seen such a large penis. At this the victim would usually feel shocked and flee. On one occasion when the patient exposed himself to a young woman in the subway with the usual remark, the woman, instead of showing embarrassment, looked

at him scornfully and assured him she had. The patient derived no satisfaction on this occasion.

In our experience, most offenders were quiet, docile, submissive individuals who freely expressed feelings of inadequacy and inferiority. Many had recollections of strict home environment during their early childhood, with a rigid and cruel father or a domineering mother. Few of these offenders ever made any serious attempt, of their own volition, to adjust on an adult heterosexual level. Some gave the explanation that they married only because of family pressure.

*Pedophilia.*—Gratification from sexual intimacies with a child.

The intimacy may comprise exposing the genitals before the victim, manipulating the child, or even penetrating the child partially or completely. This group of offenders is made up of the most diverse types with regard to age, cultural background, and the circumstances in which the offense occurs. Generally the offender has made an attempt at adult sexual adjustment, but has failed because of persistence of infantile sexual attitudes which assert themselves when the inhibitory forces are weakened as in senility, under the influence of alcohol, or impotency.

When pedophilia occurs late in life after the offenders have become sexually impotent, and their sexual object is a child of the same sex, one is inclined to regard the phenomenon as a regression to a homosexual stage in infantile sexuality.

Most of our cases in this group were either married at the time of the offense, or had been married at some previous time. Many were fathers of one or more children. A considerable number had no criminal record and their abnormal sexual tendencies were related to diminished sexual potency. Generally this group contained a greater number of superficially self-assertive, aggressive personalities than the group of exhibitionists.

*Homosexuality.*—Sexual activity with one of the same sex. Some workers insist that homosexuality is always due to genetic factors, while others insist with equal emphasis that it is due to endocrine dysfunction. A third group claims that the disorder is

primarily of psychological origin. Rejection by the parent of the opposite sex during childhood or excessive physical or psychic stimulation by the parent of the same sex may lead to homosexuality. Isolation from contact with persons of the opposite sex, as in reformatories and prisons, frequently accompanied by seductions by older boys or adults, may also lead to homosexuality.

In our experience, homosexuality in nearly all cases has been of psychological origin. Usually it has been conditioned by abnormalities in the family constellation. Often the loss of the father in early childhood has been noted. Many of the patients have been only children or had only female siblings or had a home environment which was entirely feminine. In a number of instances, patients had grown up in institutions since early childhood. It was interesting to observe how extremely few of the homosexuals developed anxiety, guilt or other neurotic manifestations.

#### INTELLECTUAL, PERSONALITY AND NEUROTIC ASPECTS

Psychometric examinations were made chiefly when the psychiatrist had found that the individual was of inferior intelligence; but as these examinations were not made in all cases, the results cannot be utilized statistically. Clinically we have noted that certain groups comprised a larger percentage of individuals of inferior intelligence than others. None of our patients was of the idiot or imbecile level since such individuals were detected through pre-trial psychiatric examinations or by the probation officer's customary investigation prior to sentence. They never reached correctional institutions but were committed by the courts to institutions for defective delinquents. Cases of borderline and dull normal intelligence were encountered with greater frequency in exhibitionists, especially in cases which did not exhibit neurotic traits; and in cases of pedophilia, particularly the shy schizoid types who found preference for very young children.

On the other hand, we found in the homosexual group several cases with high average intelligence. The same observation was made in several of the exhibitionists, espe-

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cially those who displayed neurotic traits in addition to exhibitionism.

None of the cases was found psychotic. Psychotics were eliminated and hospitalized either through the original examinations at Bellevue following a pre-trial or pre-sentence court order for observation, or were detected by the psychiatric staffs at the correctional institutions while serving sentence.

Some offenders had strong neurotic tendencies in addition to their psychosexual maladjustments. Stekel has regarded all abnormal sexual behavior as neurotic; it is our experience, however, that a definite neurosis is not always demonstrable, although it can be stated that a neurotic pattern exists in all cases. We wish to stress that there is a distinction between a genuine neurosis and a neurotic pattern of behavior. The presence of neurosis was especially marked in cases of exhibitionism of average or better than average intelligence, particularly in those who were repeatedly arrested for the same offense. They appeared to have superficial insight into their sexual difficulties but complained that they could not resist the impulse toward exhibitionism. The stronger and more frequent the impulse, and in spite of humiliation and punishment, the more noticeably was the individual a true neurotic.

With regard to personality make-up, the schizoid personality or the deviate with prominent schizoid traits occurred with greater frequency among the pedophiles. These were often individuals who were too self-centered and withdrawn to make any adequate attempt towards a psychosexual adjustment on a mature and adult level. They were usually under the age of 30. In marked contrast, the group of offenders convicted of sex relations associated with force, had a high proportion of psychopathic personalities with strongly aggressive tendencies and past records of aggressive activities, often of antisocial nature not always related to sexual behavior. Alcohol occasionally played a rôle in the commission of forcible rape.

#### MEDICO-LEGAL ASPECTS OF SEXUAL OFFENSES

The importance of the problem of sex offenses with regard to the medico-legal aspects

can best be illustrated by citing the figures quoted by the Citizens' Committee on the Control of Crime in New York City. In New York City alone, 1881 cases of sex offenses were charged in 1937. In 1938, the number of sex offenses charged amounted to 1888, including 748 rape charges (statutory, actual and attempted) and 1140 other sexual offenses. The latter group included such charges as carnal abuse, sodomy, incest, seduction and abduction, impairing the morals of minors and indecent exposure. The number of offenses reported for 1937 was 51% greater than the number reported in 1936 and 110% above the average for the seven year period from 1929 to 1935 inclusive. With regard to final disposition of these cases, it is noteworthy that only 40% of the defendants were convicted as compared with 70% convictions of defendants tried in the same courts and charged with felonies and misdemeanors other than sex offenses. In a study of 2022 sex offenders in New York City in 1937 and 1938, it was found that only 246 received psychiatric examinations and of these, about one third were committed to institutions as psychotic or mentally defective.

A study of the Penal Code of the State of New York which defines crimes and their punishment, reveals to what a considerable extent legislation has interested itself in prohibiting certain types of sexual behavior. Some of these sex crimes though not infrequent, result in a minimum number of arrests and prosecution. Adultery is such an example. Although newspaper accounts of divorce on the ground of adultery are frequent, seldom does one read of legal prosecution of the parties to the adultery. According to the penal code, adultery is punishable by imprisonment up to six months in a county jail or penitentiary, or a fine of \$250 or both. The non-enforcement of this article of the code illustrates how changing social attitudes influence legal procedure with regard to sexual behavior.

Cases have been known of women who exposed their genitals but were either not arrested or were charged with intoxication or disorderly conduct. We have seen no examples of such charges as impairing the morals of a minor among women although



there are instances in which women have seduced minors.

In some countries, particularly the Latin countries, there are no laws punishing homosexuality except where minors are involved. Anglo-Saxon cultural tradition, however, has so influenced our legislation that repeated arrests for homosexuality may incur penitentiary sentences up to three years. It is well known that certain confirmed and obvious homosexuals congregate in their own particular circles, that the prognosis is poor for cure either by punishment or through medical or psychiatric methods. These individuals are arrested repeatedly and segregated together with other homosexuals away from the rest of the prison population. In the absence of adequate psychotherapy in most prisons, the possibility for helping certain types of homosexuals is lacking, and the effects of prison life on their personalities make it difficult for these individuals to adjust outside of prison. Adequate employment commensurate with their intelligence and skills may be denied them because of a prison record. This leads to a further loss of morale which seriously interferes with social rehabilitation. The severe punishment sometimes given homosexuals contrasts glaringly with the comparatively light sentences occasionally meted out to sex offenders convicted of impairing the morals of minors. We have noted a number of instances where such offenders have received only six months sentences. Of all the sex offenses those involving small children, particularly those under ten, should be regarded as the most dangerous to the community, especially in view of the strong compulsion to repeat such offenses. A large number of these offenders are of inferior intelligence and some are mental defectives.

It is in this group that murders of small children occur, usually to prevent detection by the police. It is strongly felt that there should be legislative changes which will permit the release of such an offender only when a state board consisting of at least three highly skilled and experienced psychiatrists, decides that his release is without danger to society. Under the present system, these individuals must be released on expiration of the maximum sentence even though there

are indications that they may still be a menace to children. It is suggested that at expiration of the maximum sentence, such offenders should be placed in a special work colony which is neither a penal institution nor a mental hospital but in which psychiatric methods and supervision prevail. The present method of dealing with sex offenders is wasteful, inefficient, unscientific and does not sufficiently protect society.

To do proper justice to a certain group of sex offenders, it is essential that all sex offenders receive careful and detailed psychiatric examination. This should be mandatory under the law. A considerable number of persons charged with indecent exposure are psychoneurotics who require psychiatric treatment rather than a prison term which is the usual disposal by the courts because of public alarm and prejudice against all sex offenders irrespective of the nature of the offense. Where psychosis exists in a sex offender, state hospital care should be instituted except in mild cases amenable to extramural therapy and when the offender is not a menace to himself or the community. Mental defectives, particularly those involved in sex offenses with minors, should invariably be committed to state schools for mental defectives.

From a social standpoint, our main legal and psychiatric concern should be directed towards the pedophile sex offenders who are attracted to very small children either through their homosexual tendencies or inadequate psychosexual development. Analysis of many cases involving statutory rape indicates that no particular problem exists from a purely psychiatric standpoint. In such cases environment, chance circumstances, and the general problem of sexual delinquency among minor girls are more important than the psychiatric status of the offender himself.

#### SUMMARY AND CONCLUSION

1. The clinical records of 250 male non-psychotic sex offenders, admitted consecutively to the psychiatric division of Bellevue Hospital over a period of thirteen months, were studied. Clinical data regarding type of offense, age, racial origin, nativity, educa-

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tion, religion, marital status, and previous offenses are presented.

2. Pedophilia and exhibitionism were the most frequent types of offense, together comprising two-thirds of the cases. The remaining four types of offense—statutory rape, incest, sex relations associated with force, and homosexuality—together comprising one-third of the cases.

3. The statutory rape group was, on the average, younger than the pedophilia and exhibitionism groups. There were 53 (22%) Negroes in the series. This represents a greater incidence of Negro offenders than would be expected from the population percentages in New York City.

4. Fifty-six (23%) were of foreign birth. This represents a smaller incidence of sex offenders among the foreign born than would be expected from their ratio to the native-born population in New York City.

5. Sixty-two (15.7%) had completed 8 grades of schooling. Of these 15 completed four years of high school and 9 had attended college. Of the remainder, 4 (1.7%) had attended ungraded school and 10 (4.1%) had no schooling whatsoever. The others had less than 8 grades of schooling.

6. Only 64 (26.4%) were married and living with their wives at the time of the offense, as compared with 109 (45%) who were single. The remainder were either divorced, separated or widowed.

7. Seventy-seven (32%) had been previously charged with sex offenses, and 87 (38%) had been previously charged with non-sex offenses. The remainder had no past criminal record.

8. The psychopathology of the sexual perversions in the main consists of faulty psychosexual development—"fixation" at an infantile or childhood level, or persistence of infantile attitudes toward infantile objects, resulting in an inability to attain sexually mature attitudes later in life.

9. From a medico-legal and social standpoint, the pedophilic sex offender is a problem of chief importance and when such an offender following completion of a sentence is still a potential menace, means should be adopted for further supervision. Psychiatric examination of all sex offenders should be made mandatory through legislative enactment. Through an educational program, the

public and all who have the handling of sex offenders should be made acquainted with the potentialities for rehabilitation which can be offered in certain types of offenders through psychiatric methods, and should understand that purely penological measures are unsatisfactory.

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## DISCUSSION

GARRETT HEYNS (Director of Corrections, Lansing, Mich.)—For the purpose of this discussion, I am taking my departure from what Dr. Apfelberg had to say on the medico-legal aspects of the question of the treatment of the sex offender. He suggests that means be adopted for further supervision of this type of offender, and further that the public should be enlightened on the potentialities for rehabilitation which can be offered in certain types through psychiatric methods, and "that purely penological methods are unsatisfactory."

I have been asked particularly to comment on Michigan's experiences with this type of offender in the light of the state's more recent legislation. Michigan has for some time had laws on its statute books relating to the criminal sexual psychopath. From time to time sections of these laws have been declared unconstitutional by our state Supreme Court. Effort has been made to meet these objections in the present law (Act 165, P.A. 1939), commonly called the "Criminal Sexual Psychopath" law.

Under the provisions of the act (in effect since October, 1939) persons to whom the law has been applied are committed to the State Hospital Commission and detained at the Ionia State Hospital. Here they remain for a period of observation. Those whom the psychiatric staff of the hospital regard as the most likely to profit from treatment are retained there; the others are transferred to the State Prison at Jackson. The latter, therefore, belong to the group who may be considered purely custodial cases, that is, those who should be permanently segregated because there is little hope of improvement.

At the end of April, 1943, a total of 99 had been committed under the act; of these 53 were detained at the Ionia State Hospital, while 46 were transferred to the State Prison.

Those transferred to the prison are there treated much the same as other inmates. They are not given a number; they are called "visitors"—a title which lacks the usual connotation in this case. However, they are processed by the classification committee, and a program is mapped out for them. They may be assigned to the schools, the industries, maintenance crews, or other work details. From time to time they are seen by the prison psy-

chiatrist and a report is forwarded to the Hospital Commission.

Since the act went into effect, several have been released. From Ionia 15 have been paroled by the Commission. From Jackson 4 have been released by parole, while 7 have been given their liberty through court order. Thus there have been 26 releases out of 99 committed. I might add, that the State Parole Board of the Department of Corrections has no jurisdiction over cases of this type which are detained at the prison. Parole of the criminal sexual psychopath committed under Act 165, lies solely within the power of the State Hospital Commission. However, through agreement between the Hospital Commission and the Department of Corrections, parole officers on the staff of the Bureau of Paroles will make home and job placement investigations prior to release and will, upon request of the Hospital Commission, give parole supervision.

Certain comments may be made upon the operation of the act:

1. The law provides that any one committed under it "must be cured" before he can be released. The difficulty involved herein is obvious.

2. There is no uniformity of practice in our courts with reference to this type of sex offender. The act provides that the Prosecuting Attorney "may file." Some do, and some don't. The consequence is that we will have in our state prison men committed for the same offense. Some of these will be committed under our Act 165 and will, therefore, have what amounts to a real indeterminate sentence. Others will be committed under some criminal statute and will have a definite minimum and maximum sentence. The latter know how much time they will have to serve, if they serve all of it; the others have no such information.

3. On the other hand the act does provide a means toward the permanent segregation of those "criminal sexual psychopaths" who do not respond to treatment and may be regarded as continued menaces to the safety of society. There is recognition too of the fact that purely custodial methods are unsatisfactory. Finally it constitutes an attempt to educate the public toward seeing the potentialities for rehabilitation offered in certain types of offenders through psychiatric methods.

## A COMPARATIVE STATISTICAL STUDY OF MALE AND FEMALE DRUG ADDICTS<sup>1</sup>

M. J. PESCOR

*Passed Assistant Surgeon, United States Public Health Service Hospital, Lexington, Ky.*

Female narcotic addicts were received for the first time at the United States Public Health Service Hospital, Lexington, Kentucky, on July 16, 1941. In an effort to find if any marked differences exist between male and female addicts, the clinical records of the first one hundred women admitted were compared with the records of one hundred men admitted during the same period. The results are presented herewith.

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

### DIFFERENTIAL CRITERIA

By employing Schrek's technique for testing the statistical significance of percentage differences a number of differential criteria distinguish the male and female addicts from one another(1). Listed below in the order of significance are the criteria differentiating the men from the women addicts. In the left hand column each item indicates that the men showed a higher percentage incidence of the particular factor than the women while, in the opposite column, the converse holds true.

#### MALE

1. Shifting occupational adjustment.
2. History of gonorrhea.
3. History of one or more arrests.
4. History of one or more convictions carrying penitentiary sentences.
5. Prisoner patient at the Lexington hospital.
6. Given a diagnosis of psychopathic personality at the Lexington hospital.
7. Came to Lexington hospital for treatment because of legal persuasion or fear of legal entanglements.
8. History of one or more enforced cures.
9. Violated not only narcotic laws but other laws as well, after addiction.
10. Prefers administration of drugs by the intravenous route.
11. History of military service.
12. First arrest on a charge of larceny.
13. No physical dependence on drugs when admitted to Lexington hospital because he was withdrawn while awaiting trial in jail.
14. Blood serology negative on admission.
15. Began the use of drugs through curiosity and association.
16. Relapsed to drugs after cure because of association with addict friends.
17. Sentenced to serve less than five years at the Lexington hospital.
18. Occupational classification, craftsman.
19. Criminal record prior to addiction.
20. Sentenced to serve five years or more at the Lexington hospital.

#### FEMALE

1. No history of gainful extramural employment.
2. Granted trustyship immediately on admission to the hospital.
3. No delinquency record after addiction.
4. No record of convictions carrying prison sentences.
5. Voluntary patient, not a law violator, hence not sentenced to serve time in the hospital.
6. Became addicted to the use of morphine because of some painful or distressing physical condition.
7. No history of arrests on any charge.
8. Occupational classification, housewife.
9. Voluntary patient discharged against medical advice from the Lexington hospital.
10. Prefers subcutaneous route of administering narcotic drugs.
11. No history of previous enforced cures, i.e., jail or "iron cures."
12. Denies venereal disease of any kind.
13. Morphine first drug used.
14. Marriage disrupted by separation or divorce.
15. Morphine only drug used.
16. Had never been off drugs since she became addicted.
17. Treated on the medical or surgical wards of the Lexington hospital.
18. Physical examination reveals some gynecological disorder.
19. Given a diagnosis of psychoneurosis.
20. Showed marked physical dependence upon drugs when admitted to the Lexington hospital.

| MALE                                                                                                                       | FEMALE                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 21. Given two or more occupational assignments while at the Lexington hospital.                                            | 21. Not given an occupational assignment while in the Lexington hospital.                                         |
| 22. Resides in a city of 250,000 or more population.                                                                       | 22. No delinquency record before addiction.                                                                       |
| 23. Occupational classification, operatives.                                                                               | 23. Restricted physical activity because of chronic disabilities.                                                 |
| 24. Became addicted to drugs as a means of relieving alcoholic hangovers.                                                  | 24. Makes a living in whole or in part by prostitution.                                                           |
| 25. Bright normal intelligence.                                                                                            | 25. Rationalizes relapse to use of drugs after cure on basis of necessity to relieve pain or physical discomfort. |
| 26. Last drug used, heroin.                                                                                                | 26. Positive blood serology on admission to Lexington hospital.                                                   |
| 27. Currently sentenced for the illegal sale of narcotics.                                                                 | 27. Resides in community of 50,000 or less population.                                                            |
| 28. Unmarried.                                                                                                             | 28. Member of white race.                                                                                         |
| 29. History of using heroin.                                                                                               | 29. Mild physical dependence on drugs shown when admitted to Lexington hospital.                                  |
| 30. Principal leisure time activity, sports.                                                                               | 30. History of chronic diseases.                                                                                  |
| 31. Violation of drug laws only, after addiction.                                                                          | 31. Induced by relatives and friends to seek treatment at the Lexington hospital.                                 |
| 32. Intact marriage.                                                                                                       | 32. Physical and laboratory examinations show presence of diseases of the digestive tract.                        |
| 33. Family history of criminalism.                                                                                         | 33. Family history positive for alcoholism and drug addiction.                                                    |
| 34. Relapsed to the use of drugs after cure in an effort to recapture original thrill.                                     | 34. Unusual dislike for certain members of her family.                                                            |
| 35. History of using opium.                                                                                                | 35. Dull normal intelligence.                                                                                     |
| 36. First drug used, opium.                                                                                                | 36. Only one occupational assignment during stay at Lexington hospital.                                           |
| 37. History of using cocaine.                                                                                              | 37. Uncooperative, difficult to manage while at Lexington hospital.                                               |
| 38. Medium supervision later changed to minimum (trustship) during stay in Lexington hospital.                             |                                                                                                                   |
| 39. Minor physical defects not interfering with normal physical exertion found upon examination at the Lexington hospital. |                                                                                                                   |
| 40. Member negro race.                                                                                                     |                                                                                                                   |

The chief points of difference between the two sexes are in the delinquency record and the addiction history. The men are apparently more antisocial than the women. Likewise the men tend to experiment with a number of narcotic drugs, whereas the women tend to confine themselves to the use of morphine. The one becomes addicted through curiosity and association, the other for the relief of some painful or distressing physical condition.

In general the men are in better health than the women. Interesting is the high incidence of a history of gonorrhea among the men as compared to the incidence among the women. Yet 25 per cent of the women had syphilis on admission in contrast to 7 per cent of the men. Either women do not know when they have gonorrhea, conceal the fact that they have had it, or else the men are bragging.

#### THE AVERAGE FEMALE ADDICT

Based on averages and highest frequencies, the statistically typical female drug addict representative of the first one hundred women admitted to the Lexington hospital would be a forty-three year old white voluntary patient, that is, one who sought treatment for her addiction of her own free will. She would hail from a community of 50,000 or less population. A native of native born parentage, brought up in the Protestant faith, she would complete the first year of high school but would have no regular occupation except for her duties as a housewife. She would have one child and her marriage would terminate in separation or divorce.

She would become addicted to morphine at the age of twenty-nine for the relief of some painful or distressing physical condition and would confine herself to the use of morphine by the subcutaneous route of ad-

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ministration. She would give no history of prior treatments for her narcotic drug habit and would come to the Lexington hospital because of the insistence of relatives and friends or because of fear of legal complications. Upon admission to the hospital she would show a moderate degree of physical dependence on drugs. Despite her relatively long period of addiction, she would not give any history of conflicts with the law.

Her family history would be positive for alcoholism. Her parents, like herself as an adult, would be in marginal economic circumstances. The chances are that the continuity of her early home life would be disrupted by the death of one or both parents, or by the separation of her parents. She would be the oldest of four children and would show normal familial attachments. As a child she would make a satisfactory social adjustment; but as an adult she would not, neither before nor after addiction. She would give attending movies and dancing as her principal recreation. Her relationship with men would not be on a Platonic basis.

She would have the usual childhood diseases without sequelae but, as an adult, she would be subject to some chronic ailment which would lead to her drug addiction. She would deny any mental disorder or venereal disease. Physical examination invariably would show poor dentition and very likely some circulatory disturbance or gynecological condition. Her blood serology would be negative and her intellectual classification would be dull normal. Psychiatrically she would be diagnosed as psychopathic diathesis, which according to Kolb's classification(2), means an uncrystallized personality defect falling short of actual psychopathy.

Being a voluntary patient she would demand her release against medical advice because of urgent business or because her family needed her at home. During her brief stay in the hospital, she would be a trusty but would not engage in any occupational therapy since she would spend her time on the withdrawal or in the medical or surgical wards undergoing treatment for her physical complaints. She would be given a guarded prognosis for continued abstinence from drugs which is a vague way of stating that she will probably relapse.

#### THE AVERAGE MALE ADDICT

The statistically typical male drug addict would be a forty-two year old white prisoner patient, that is, one who violated some federal law and was given a definite sentence to serve thus fixing the period of treatment for his addiction. Most likely he would be given a sentence of over two years, but under five, for the illegal sale of narcotic drugs. He would come from a city of 250,000 population or more. A native of native parentage, he would be brought up in the Protestant faith and would complete the eighth grade quitting to go to work. He would make a marginal economic adjustment shifting from one job to another usually in an occupation classified as craftsman or operative according to the index of the Census Bureau(3). He would be separated from his wife and have one child but would contribute little to their support.

He would become addicted to the use of morphine at the age of twenty-seven through curiosity and association. Although he would prefer morphine he would also use heroin and opium. However, morphine administered either subcutaneously or intravenously would be the last drug used. He would have at least two previous voluntary attempts at cure and at least three enforced cures for his drug addiction, the longest period of abstinence after any of these being twenty-one months. He would relapse because of association with addict friends and because of his desire to recapture the original thrill of using narcotic drugs. Upon admission to the Lexington hospital he would show no signs of physical dependence upon drugs having "kicked" his habit "cold turkey" while in jail awaiting trial.

He would have no delinquency record prior to addiction but, after addiction, he would have a total of eight arrests, two of which would have resulted in prison sentences and the rest in short jail sentences or dismissal. His antisocial record would include offenses against property, such as larceny, as well as violation of the narcotic laws because he would be forced to steal in order to supply himself with funds for the purchase of his drugs.

His family history would be positive for criminalism or alcoholism. His home would

## MALE

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22. Resides in a city of 250,000 or more population.
23. Occupational classification, operatives.
24. Became addicted to drugs as a means of relieving alcoholic hangovers.
25. Bright normal intelligence.
26. Last drug used, heroin.
27. Currently sentenced for the illegal sale of narcotics.
28. Unmarried.
29. History of using heroin.
30. Principal leisure time activity, sports.
31. Violation of drug laws only, after addiction.
32. Intact marriage.
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29. Mild physical dependence on drugs shown when admitted to Lexington hospital.
30. History of chronic diseases.
31. Induced by relatives and friends to seek treatment at the Lexington hospital.
32. Physical and laboratory examinations show presence of diseases of the digestive tract.
33. Family history positive for alcoholism and drug addiction.
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He would become addicted to the use of morphine at the age of twenty-seven through curiosity and association. Although he would prefer morphine he would also use heroin and opium. However, morphine administered either subcutaneously or intravenously would be the last drug used. He would have at least two previous voluntary attempts at cure and at least three enforced cures for his drug addiction, the longest period of abstinence after any of these being twenty-one months. He would relapse because of association with addict friends and because of his desire to recapture the original thrill of using narcotic drugs. Upon admission to the Lexington hospital he would show no signs of physical dependence upon drugs having "kicked" his habit "cold turkey" while in jail awaiting trial.

He would have no delinquency record prior to addiction but, after addiction, he would have a total of eight arrests, two of which would have resulted in prison sentences and the rest in short jail sentences or dismissal. His antisocial record would include offenses against property, such as larceny, as well as violation of the narcotic laws because he would be forced to steal in order to supply himself with funds for the purchase of his drugs.

His family history would be positive for criminalism or alcoholism. His home would

be intact up to the age of eighteen years but his parents would be in poor economic circumstances. He would be one of four children occupying an intermediate position in the constellation of siblings. He would be well behaved and sociable as a child with normal familial attachments. As an adult he would make a fair social adjustment prior to addiction but a very poor adjustment after addiction. He would have the usual heterosexual experiences of the Tom cat variety but would admit that drugs cut down his desires considerably. Like the average American male he would be interested in sports from a spectator standpoint.

He would have a history of the usual diseases of childhood without sequelæ, and gonorrhea, but would deny any mental disorder. Physical examination would disclose poor dentition and perhaps some other minor condition neither of which would interfere with normal physical exertion. His blood serology would be negative and his intellectual classification would be normal. His psychiatric diagnosis would be psychopathic personality without psychosis.

During his stay in the hospital he would be kept under medium supervision, that is, under guard or locked inside the building for a while, but he would be made a trusty some time before his release. He would be quartered in a continued treatment service under the care of a psychiatrist and assigned for occupational therapy to one of the maintenance details. He would ask for at least one change of work. He would leave the hospital after serving two-thirds of his sentence on

condition that he must report to his probation officer periodically during the balance of the sentence imposed. He would be given a poor prognosis for continued abstinence from drugs.

#### SUMMARY

1. A comparative statistical study of male and female addicts based on the clinical records of one hundred men and one hundred women admitted to the U. S. Public Health Service Hospital, Lexington, Ky., is presented.

2. Statistically typical male and female addicts are described.

3. The male addict is a prisoner patient and has a more serious antisocial record than the female addict who, in contrast to the male, enters the hospital voluntarily.

4. The male addict begins the use of drugs through curiosity and association and is inclined to use more than one kind of narcotic drug, whereas, the female becomes addicted for the relief of some painful or distressing physical condition and generally confines herself to the use of morphine.

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## NEUROLOGY AND PSYCHIATRY IN PALESTINE

L. HALPERN, M.D.<sup>1</sup>

Parallel with the rise in the number of physicians in Palestine in recent years, from several hundred to over two thousand, the number of neurologists and psychiatrists has also increased noticeably. In 1932 there were only three nerve specialists in the country; by 1942 there were 64: 34 in Tel-Aviv, 21 in Jerusalem, and 9 in Haifa. The great majority practise general neurology and psychiatry, a few limit themselves to psychoanalysis. As yet there are no Arab neuro-psychiatrists in Palestine.

The first association of nerve specialists was organized in Jerusalem in 1939. The neuropsychiatrists of Tel-Aviv soon followed the example and founded an association of their own. The first conference of neurologists and psychiatrists from all over the country took place in Jerusalem, January 10, 1935. The meeting dealt mainly with the inadequate opportunities for the hospitalization of mental cases in Palestine and the urgent needs of the country. Resolutions were adopted urging government support and calling for the expansion of existing public institutions. A Palestine Neurological and Psychiatric Society was organized and an executive committee elected to deal with the question of hospitalization, and arouse public support. In 1936 a census of Jewish mental cases was undertaken. (This was limited to Jews owing to the difficulty of obtaining access to Arab cases.) A promising attempt was also made to initiate a mental hygiene movement in Palestine; but it was thwarted by the political disturbances of 1937. However, the local associations in Jerusalem and Tel-Aviv maintained their scientific and public activities uninterruptedly. Special memorial meetings were held for Hughlings Jackson, Sigmund Freud and Wagner von Jauregg. A separate psychoanalytic society also held regular meetings.

Care in the public medical institutions for

patients suffering from nervous diseases has increased noticeably during recent years. Kupath Holim maintains special out-patient clinics for nervous diseases for its members in Tel-Aviv and Haifa, each of which has had a yearly attendance of between 1400 and 1800 patients.

The Rothschild-Hadassah University Hospital in Jerusalem began to make provision for neurological consultations as far back as 1926, but it was not until 1938 that an independent out-patient clinic for nervous and mental diseases was established. There is also an out-patient clinic for nervous diseases at the Hadassah Municipal Hospital of Tel-Aviv. In 1942 each of these clinics cared for more than 2000 patients. The Psychiatric Hospital of the Ezrath Nashim Organization and the Psychoanalytical Institute, both of Jerusalem, provide additional consulting hours.

The neurological cases requiring hospitalization are scattered among the general hospitals throughout the country. With the opening of the new Hadassah University Hospital on Mount Scopus in 1939 the question of clinical neurology became pressing. At present eight beds are available for neurological cases. This minimum bed capacity obviously needs enlargement since the university neurological service is the only one of its kind in the whole of Palestine. The department provides instruction and specialized training for physicians in clinical neurology and offers special post-graduate courses under the auspices of the Hebrew University. The Hadassah and the university have placed their clinical and laboratory facilities at the disposal of British and American physicians.

Neurosurgery of the spinal cord was practised for some time at the hospital. On the other hand, tumors of the brain had to be sent abroad for operation. One of the results of the present war was that Palestine was practically cut off from Europe and America and it became imperative to develop a neuro-surgical department at the University Hospi-

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tal. In January 1942, an American neurosurgeon, Dr. H. Wigderson, came to Jerusalem to take charge of the department. It has more than justified itself in the brief period of its existence and proved a real boon to the country and its neighbors.

The types of neurological cases in Palestine differ very little from those of other countries. The incidence of multiple sclerosis is comparatively low in the Jewish population. In recent years there has been an increase in syphilitic affections of the nervous system, formerly uncommon among Jews. Neurolues is more prevalent among immigrants from western Europe and among those from neighboring oriental countries, and is frequently met with among indigenous Jews and Arabs who have spent some time in occidental countries. Poliomyelitis is endemic in Palestine. In times of economic distress there is a high frequency of deficiency diseases among the poorer people, particularly of pellagroid affections of the nervous system.

Cases of drug intoxication are comparatively uncommon. Jewish addicts incline to morphinism, while Arabs prefer hashish. Even though there is a rich wine culture, alcoholism is still very rare among Jews. Among the several thousand patients treated in the Hadassah out-patient clinic for nervous diseases during the last few years, I have come across only three cases of acute alcoholic polyneuritis. Two of the drunkards, all of whom consumed immense quantities of arak daily, were oriental Jews. One of them worked in a slaughterhouse, the other in a cemetery. The third, Abraham ben Abraham, was, as his name suggests, a proselyte. He had formerly been a Moslem but was fonder of his cups than of his religion, and gladly exchanged Islam, which forbade him to indulge his craving, for the more accommodating Jewish faith.

Since the outbreak of the war there have been periodic increases in the incidence of traumatic and anxiety neuroses. The first wave came with refugee immigrants who had been imprisoned in Nazi concentration camps. The second followed the air raids on Tel-Aviv. The third was caused by the discharge of Jewish soldiers from the army for psychiatric reasons.

The 1931 census in Palestine recorded 809

insane persons; the ratio was 83 per 100,000 population. The 809 psychotics consisted of 453 Moslems, 100 Christians, 249 Jews and 7 others. The following figures give the ratio per 100,000 according to communities:

|                  |     |
|------------------|-----|
| Moslems .....    | 65  |
| Christians ..... | 109 |
| Jews .....       | 143 |

The relatively high incidence of psychoses among Palestinian Jews is due to several causes. First, the overwhelming majority of the Jewish community consists of immigrants. It seems that the physical and mental strain involved in the adjustment to a totally new way of life leads to the development of psychoses, especially during the first year. (It has been shown that psychic morbidity among immigrants in the U. S. A. is also high.) Blumenthal has shown that 59 per cent of the psychoses among immigrants to Palestine developed during their first year in the country, 25 per cent in the second year, 19 per cent in the third year, and 6 per cent in the fourth and subsequent years. Second, owing to the continuity of Jewish immigration and the type of people who immigrate, the lower age groups predominate greatly. It has been shown in England and America that mental disorders occurring in individuals between the ages of 15 and 30 comprise up to 26 per cent of the total number of psychotics. Among Palestinian Arabs the percentage is 23 and among the Palestinian Jews it is 32. The factors in this ever-growing number of mental cases also hold good for Jews who have immigrated into Palestine from occidental countries. The significance of the different levels of civilization is revealed by the proportion of insane persons among the various Jewish communities. The index of insanity for the Ashkenazi community is 1.12 per cent, for Sepharadi 0.79 and for the oriental communities only 0.49 per cent. The same holds good for the Arab population. According to the 1931 census, the Christian Arabs, who on account of their education and occupation are on a higher social level than the Moslems, have the high frequency of 109 insane persons per 100,000, as against 65 among the Moslems. Consequently Christian Arabs number more than 50 per cent of the inmates of the Government Asylum for the Insane at Bethlehem, although the Christian Arab community is

only one-eighth the size of the Moslem community.

A later census taken in 1936 by the Neurological and Psychiatric Society was based upon information supplied by all the private institutions, and upon a detailed inquiry among neuropsychiatrists. According to this census the number of Jewish psychotics was 726, which gave a frequency of 194 per 100,000 inhabitants. Although this figure suggests a very high frequency of insanity, it compares favorably with that of American and most European countries, which averages between 300 and 400. The low frequency among Palestinian Jews despite the factors previously considered, is largely due to the selection of immigrants and the prevention of admission of persons with mental disease.

In 1942 the Jewish population of Palestine was estimated at half a million. On the basis of 200 mental cases per 100,000, one thousand psychiatric beds are needed for the Jewish population alone; or if we take the estimate of the 1931 census of an average of 100 mental cases per 100,000 for all three communities, we find that among the present population of 1,600,000, there is a need for 1,600 beds. In striking contrast to the estimated requirements only 569 beds were available for this purpose in 1941. Of this number 82 were for Arabs and 487 for Jews. The institutions for the mentally ill at present comprise the Government Asylum at Bethlehem, two public Jewish institutions, one in Jerusalem and one in Bnei Beraq, and a few private institutions and homes. The following table gives a comparison of bed-capacity of these institutions in 1936 and 1941:

| Institution                                       | Bed-capacity in<br>1936 |          | Bed-capacity in<br>1941 |          |
|---------------------------------------------------|-------------------------|----------|-------------------------|----------|
|                                                   | No. of<br>beds          | Per cent | No. of<br>beds          | Per cent |
| Govt. Asylum,<br>Bethlehem . . . .                | 157                     | 42.8     | 153                     | 26.9     |
| Ezrath Nashim<br>Asylum, Jerusa-<br>lem . . . . . | 60                      | 16.4     | 72                      | 12.7     |
| Bnei Beraq Asy-<br>lum . . . . .                  | 58                      | 15.8     | 118                     | 20.7     |
| Private institu-<br>tions . . . . .               | 92                      | 25.0     | 226                     | 39.7     |
| Total . . . . .                                   | 367                     | 100.0    | 569                     | 100.0    |

The Government Asylum at Bethlehem was established in 1922 with a bed-capacity of 20; by 1936 this was increased to 157, at which time it occupied the first place in the hospitalization of mentally ill. However, between 1936 and 1941 its capacity was not enlarged, despite the increase of half a million in the population of Palestine and the corresponding increase in the number of mental patients requiring hospitalization. The Government institution remains the only one for Arab cases.

The principal Jewish mental asylum is that founded in Jerusalem in 1895 by the Ezrath Nashim Organization. This institution, the oldest of its kind in Palestine, is recognized by the government and received a one-time government grant for the purpose of extending its accommodation. Last year the Hadassah Medical Organization granted it a subvention out of its emergency fund for the purpose of introducing occupational therapy. The bed-capacity of the asylum, which for several years averaged 60, rose to 72 in 1941. The institution serves for the post-graduate training of young physicians in clinical psychiatry. Instruction is also given to psychiatric attendants. The second Jewish public mental hospital is situated at Bnei Beraq, and was established owing to the very pressing need for psychiatric hospitalization. It serves Tel-Aviv and the surrounding area. Despite the difficult conditions with which it has to contend, it succeeded in increasing its bed-capacity from 58 in 1936 to 118 in 1941. As the result of pressure of Jewish public bodies, the government contemplates taking over full responsibility. The inmates of the two Jewish public institutions during 1941 totalled 190. This year Kupath Holim opened a hospital specially for its members. This institution, which bears the name of "Gehah," contains 60 beds and is intended mainly for acute cases.

There are five private psychiatric institutions; one in Haifa, one in Jerusalem and three in the Tel-Aviv area. There are also three homes for mental patients in Giv'ath Shaul, a suburb of Jerusalem. The private institutions have undoubtedly done much to solve the urgent hospitalization problem. These private institutions under the direction



of experienced specialists have also done much to raise the general standard of psychiatry in Palestine. They alone have introduced modern shock therapy; even now this is not practised in most of the public institutions. The reason is that the latter, both government and Jewish, mostly admit chronic cases, while the acute cases are assigned to the private institutions. The private homes hold 98 of the 226 cases hospitalized. These homes are primitive in every respect and until recently were without any form of medical assistance. It is only during the last two years that they have been subjected, at the instance of the Jewish medical authorities, to a minimum degree of medical supervision.

The very conservative estimate of the need of 100 beds per 100,000 population, shows that the share borne by the government is pitifully small. For the present population it amounts to 10 per 100,000, or 15 per 100,000 for the Jews and about 8 for the Arabs. The position of the Jewish patients would have been fully as disastrous as that of the Arabs had the Jews not taken matters into their own hands and created additional facilities. To do this the Jewish population has assumed a heavy financial burden. As far as can be ascertained the cost of maintaining these institutions during 1941 amounted to something over 50,000 pounds. However, the 500 beds for Jewish mental cases raise the ratio to 100 per 100,000 inhabitants.

Some of the facts with regard to the sex and age of Jewish mental cases are remarkably interesting. Whereas the majority of mental cases among the Arabs, both Moslem and Christian, are men, the majority among the Jews are women. According to the 1931 census the proportion of Jewish insane women to men was 52.6 per cent to 47.4 per cent. According to the census of 1936, which covered 726 cases, the proportion was 60.7 per cent women and 39.3 per cent men, although the number of men and women in the general population was approximately equal. Likewise the proportion among the Jewish mental cases hospitalized during 1941 was: women 63.4 per cent, men 36.6 per cent. Incidentally, the predominance of

women among Jewish mental cases is not confined to Palestine, but was also observed in Poland. Becker, basing his conclusions on the official statistics for 1921-1927, finds that among the Polish non-Jews the proportion was 60.8 per cent men to 39.2 per cent women, while among the Jews it was 56.3 per cent women and 43.7 per cent men. This phenomenon is closely connected with the incidence of the various types of mental and nervous diseases among the Jews, and may be explained by the fact that alcoholic and luetic psychoses to which men are more prone are comparatively rare among Jews.

With regard to the age of Jewish mental cases, data for the year 1936 show that morbidity reaches its peak between the ages of 20 and 30. More exact information as to the frequency of mental diseases among the lower age groups has recently been provided by what is known as Miss Szold's Youth Aliyah project. Of the 6,014 young people in this group, between the ages of 17 and 25, no less than 26 had contracted mental diseases up to the year 1941. In almost all the cases the diagnosis was schizophrenia. The frequency was 4.3 per 1,000 for that particular age group. This relatively high ratio, as compared with the ratio of 2 per 1,000 among an entire population, also predominantly young in character, sheds a great deal of light upon conditions pertaining to psychiatric morbidity among the Jews of Palestine.

Worthy of interest are the types of psychoses and the frequency with which they occur. The following table shows the diagnostic grouping of Jewish mental patients hospitalized in 1936 and 1941:

| Diagnosis                                     | Per cent,<br>1936 | Per cent,<br>1941 |
|-----------------------------------------------|-------------------|-------------------|
| Schizophrenia .....                           | 70.1              | 74.9              |
| Manic-depressive psychoses ....               | 10.4              | 11.0              |
| Paranoia .....                                | 1.2               | 2.1               |
| Oligophrenia .....                            | 7.6               | 2.6               |
| Senile dementia .....                         | 2.8               | 2.1               |
| Psychasthenia .....                           | 1.2               | 1.7               |
| Psychoses with organic disease..              | 2.5               | 3.0               |
| Epileptic psychoses .....                     | 0.9               | 1.1               |
| Luetic psychoses .....                        | 0.9               | 1.1               |
| Psychoses due to exogenous intoxication ..... | 0.6               | 0.4               |
| Alcoholic psychoses .....                     | 0.3               | ..                |
|                                               | 100.0             | 100.0             |



The figures for 1936 and 1941 show practically the same characteristic grouping of diseases. The endogenous psychoses, including schizophrenia, manic-depressive and paranoia, predominate; they constituted 81 per cent in 1936 and 87 per cent in 1941. Data from 1936 show that among the Arabs, too, endogenous psychoses predominate. They constituted 71.1 per cent of the Moslem and 68.1 per cent of the Christian cases hospitalized. On the other hand, luetic and alcoholic psychoses are very rare among the Jews, constituting 1.2 per cent in 1936 and 1.1 per cent in 1941; while among the Christian Arabs the ratio was 6.8 per cent, and among the Moslems 10.1 per cent.

These figures refer to the Jewish mental patients actually hospitalized, who comprise only 50 per cent to 60 per cent of the total number requiring hospitalization. Owing to the shortage of beds in public institutions, patients often have to be discharged before their complete cure has been effected. Unfortunately there is still a large number of harmless insane persons who are in a deplorable condition and walk the streets of the towns and villages. These latter include the relatively large number of cases of melancholia and depression, particularly the reactive depressions brought about by bio-sociological difficulties experienced by immigrants in adapting themselves to new conditions. Several cases of suicide from depression might have been prevented if hospital facilities had been available. It is interesting to note that in times of political tension suicides cease altogether. This fact, which was established by Peller during the 1929 disturbances, was further corroborated by the cessation of suicides during the rioting period 1936-1939. It would seem as if the individual's anxiety tends to merge into that of the community in times of stress, for crises such as those Palestine has experienced draw people together far more than in normal times. I have also noticed that neurasthenics, who generally crowd the out-patient departments, vanish during political upheavals of this nature. When, however, conditions return to normal, they come back demanding to be reinstated as regular patients.

In view of the varied nature of the popu-

lation of Palestine, the mentality of nervous patients should prove of some interest. Jewish patients in general, both in Palestine and elsewhere, are distinguished by a certain feeling of self-pity. Some of them, especially among the older generation of Ashkenazim, combine this feeling with a tendency to "philosophize" about their complaints. The following are characteristic comments by patients of this type. When asked how old he is, the patient will often reply with a counterquestion: "And if I am old, does it mean that I already have to die?" A question as to the state of his stomach may well provoke this reply: "How do you expect my stomach to be if I eat nothing?" If asked how many hours' sleep he gets at night, the patient is quite liable to retort: "How many hours is one supposed to sleep?" For many of these people, including some of the younger generation, their complaints become their main interest in life. This attitude can perhaps be best summed up in the words of a man suffering from a particularly stubborn neurasthenic complaint which was most in evidence during his leisure hours. When I suggested that he should take up some hobby to occupy his time, he said in amazement: "But, doctor, my illness is my hobby."

In contrast to the philosophic resignation with which the Ashkenazim accept their complaints, the oriental Jews are inclined to be theatrical about them. Many of these comparatively primitive people share certain medical superstitions with the Arabs. Burning of the skull, forehead or between the eyebrows with a hot iron is not uncommonly practised in Palestine by both Jews and Arabs as a means of curing psychoses. They similarly burn the afflicted limbs in cases of paralysis. The Prophet Elijah enjoys considerable popularity among the Jews as a healer of psychic diseases, as does St. John among the Christian Arabs. It is the practice, among the indigenous Jewish population, to take people suffering from psychoses—especially when medical assistance has proved ineffective—to Elijah's Cave on Mount Carmel. There the sufferers are left for the night, sometimes bound hand and foot, while their relatives offer up appropriate prayers for their recovery. The Christians used to take their psychotic cases to the monastery

of St. John at Bethlehem where, bound in chains, they were left for weeks in charge of the monks. The government however has since put an end to this practice. The fear of death is so primitive among these people, and so deeply rooted in their consciousness, that it will not allow reason to prevail even when life is endangered. That is why the Arabs, partly because of this natural fear of death and partly because of distrust of the art of medicine, prefer to consign their cases of tumor of the brain to Allah's care, even if it should result in their death, rather than allow them to be operated upon. They persist in this attitude even when the physician is sure that he could save the patient's life.

Public care for defective children is hopelessly inadequate. The only institution in the country for seriously defective children is the home in Ramath Gan, which was established by Miss Gaster whose energy and devotion keep it functioning. But this institution by itself is totally inadequate. There are some private institutions for less seriously defective children. The school hygiene department of Hadassah Medical Organization, by establishing child guidance clinics in the larger towns, is doing a notable piece of work in this field. There are only three schools in the entire country for backward children, two of them being in Tel-Aviv and one in Petah Tiqva. There is a very urgent need for setting up more schools of this kind, but so far it has not been met.

The government maintains a reformatory for juvenile offenders in Tulkarm. A few years ago a special institution for Jewish juvenile offenders was established in Gevat with the aid of a government subsidy.

Despite the stress of war, the Neurological and Psychiatric Society of Palestine met again in April 1942 in Tel-Aviv. The proceedings were largely concerned with the pressing problems of the moment. The main questions were the treatment of shock, the present state of brain surgery, and various clinical problems in neurology and psychiatry. The immediate need is to build up both neurology and psychiatry in Palestine. Despite limitations and difficulties a good beginning has been made in the two decades of the reawakening of Palestine, but a great deal more will have to be accomplished if modern needs are to be adequately met.

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## MANIC PSYCHOSIS IN A NEGRO

WITH SPECIAL REFERENCE TO THE RÔLE OF THE PSYCHOGENIC AND SOCIOGENIC FACTORS<sup>1</sup>

E. J. WIGGINS AND R. S. LYMAN, M.D., DURHAM, N. C.

Socio-economic and other environmental factors in psychiatry are sufficiently important in our opinion to warrant the report of a southern Negro farmer, who was admitted to the Duke Hospital in a manic excitement with a pronounced stamp of his cultural background.

In addition to outlining sociogenic and psychogenic influences which precipitated and colored the psychosis, we are including some notes about the way in which we presented the case to medical students and some interpretations we drew from the data.

### LITERATURE

A complete review of all reference to psychopathic behavior in the American Negro would have to cover articles and books written from many viewpoints. Even a survey of the American psychiatric literature on manic behavior in the Negro would lead to ramifications beyond the needs of this article. Accordingly, only a few pertinent references will be noted here.

Several reports are in essential agreement that state or municipal hospitals contain as many Negro manic-depressive patients as white, if not more, when considered in proportion to the numbers of the corresponding race in the community (1, 2, 5, 6, 9, 10, 17). In this group of Negro patients, females tend to predominate, and the manic phase is much more frequent than the depressed. A few writers, however, state that manic-depressive reactions are infrequent in colored mental patients (5, 16, 18). Reports on this subject vary from prejudiced descriptions to strictly objective statistical analyses. Several explanations have been offered for the presence or absence of supposed racial characteristics in the picture of Negro psychoses; for example, emancipation from slavery has subjected that unfitted race to a strain which it could not stand, thereby introducing an increasing amount of insanity,

in which melancholia is rare and mania common (1); one cannot understand Negro psychoses without taking into account the primitive, emotionally religious, superstitious, lazy but impulsive, fear-ridden, intellectually poor and morally loose make-up of the Negro in general (2, 10); the naturally happy, active, boisterous, but often mentally unstable temperament of the Negro predisposes him to manic-depressive psychoses (5); the supposed infrequency of manic-depressive reactions in Negroes is due to the "rather high plane of development" requisite for the appearance of this form of psychosis, but lacking in the Negro (8); a careful statistical survey ends with the statements that "The present data do not justify the assumption of an unquestioned constitutional inferiority among Negroes; nor do they prove conclusively that Negroes have been subjected to socio-economic or institutional discrimination prejudicial to mental health" (6). "Miscegenation and three hundred years' contact with advanced civilization have not entirely eradicated the strong African traits, customs, superstitions and traditions. Ignorance and unsound teaching are the large contributory factors for their persistence." The etiological factors are psychogenic rather than organic, with life in big cities, syphilis and alcohol as major precipitating influences (16); one author quoted has a statistical analysis without any moral appended (9); the preponderance of psychoses among Negroes is probably of environmental origin; there is no fundamental difference in etiology, diagnosis, psychotic manifestations or prophylaxis of psychoses in Negro or white (17); the supposed low incidence of manic-depressive reactions in Negroes is due to their "simpler living conditions," "more liberal code of sex morals," the "real feast of emotional release" in religious and revival services; this author ends by looking hopefully forward to the future when "it may be reasonably expected, in the light of these factors, that Negroes in generations to come will have to pay for their cultural

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progress with an increasing neurotization, which will eventually approximate that of the white race" (18); after reviewing the items on which most of the statistical analyses are based, even the existence of any racial factor in mental disease is questioned (15); the majority of characteristics which are often dismissed as "racial" could be explained in terms of home conditions, family disorganization, variation in standards of diagnosis and of facilities for hospitalization and many other social and economic influences (7).

A few articles have come to our attention which appear less concerned with diagnosis but more interested in understanding the Negro's viewpoint. For example, Evarts (4) comments that Negroes may talk freely to white doctors about some things, including hoodoo, conjures, spells, etc., but then evade further attempts to secure a more penetrating interpretation, presumably to avoid disdain if not ridicule. He offered many illustrations, especially a rather detailed account of the beliefs of "Viola," an inmate of St. Elizabeth's hospital, and he drew a number of suggestive comparisons with primitive beliefs reported in Frazier's *Golden Bough*. Evarts then sought to generalize in regard to the roots of Negro superstition, stating that there are both phylogenetic origins (residuals only recently bequeathed by generations living in barbarism in Africa) and also ontogenetic developments (beliefs which grow and guide the Negro during his lifetime in this generation).

Moore (11, 12) has two articles in which "inferiority complex" or the "conscious disadvantage complex" receive stress. A lifetime of repression of free self-expression, suppression of freedom of conduct, subjection to more or less intimidation, awareness of social and economic segregation have fostered profound changes in the personality of every Negro and have been responsible for the development of varying modes of self-defense which may become accentuated in the psychoses. On the other hand, some behavior which may appear psychotic to others is played down by Moore, as in the case of a patient diagnosed elsewhere as manic-depressive, but regarded by the author as just a typical "psychoneurotic pattern, whose character had been so altered by the conflict be-

tween his inherent inferiority complex and his dominant superiority complex that his behavior aped the picture of a typical psychosis."

The discussion of "The Negro and His Church" by R. A. Billings in 1943 (3) gives a very good description of different "classes" of Negro churches, with the corresponding psychology of the Negroes who attend them. Billings has covered in general terms several features which occurred in our patient, such as the need to shout, profession of love for all mankind, disdain of such trivialities as dancing, etc., all being a very obvious escape from his concrete socio-economic trouble.

#### CASE HISTORY

A 57-year-old Negro farmer was born and brought up in a relatively isolated community in Person County, North Carolina. His father was a freed slave without education. His mother died when he was only two years old. The father was a stern and dominating character who demanded and obtained strict obedience from his children.

The patient had almost no schooling. He likes to tell how he named himself. His father called him Bill. But when he started schooling at the age of six, he told his teacher his name was Charlie Guiteau Lawson. The teacher laughed at him, Charlie agreed that he "didn't want to kill no President," and so Guiteau was dropped and thereafter he wrote his name, Charlie W. Lawson.

At 18, he asserted his independence, ran away from home, worked here and there in neighboring states until he got word, when 20, that his father was sick. He then went home and took up his father's interests as a tenant farmer. Soon afterward, on the advice of the elders of the church he attended a revival meeting, went to the "anxious seat" and "got convicted." He jumped up and praised the Lord for the faith that had been caught. He was "baptized in a liquid grave," soon afterward joined the church, became a deacon at 35, and has served in that capacity ever since.

When 21, the patient married a quiet, sweet woman who was always obedient and did not even censure the patient's admitted philandering. The death of his father then increased his responsibilities. Relatives turned to the patient for advice and assistance in trouble. He willingly helped when he could. There was a variety too in his work. He enjoyed hunting, trapping and fishing, and he learned how to grow and sell gin-seng. But farming remained his chief interest. Dissatisfied with tenant farming, he decided to buy land for himself. With a set-back at the time of the depression in the early thirties, he nevertheless has succeeded in acquiring and developing a farm, paying his taxes and winning the respect of both whites and Negroes in the community.



When 44, his first wife died of a "stroke." Three years later he married again. He said he had to maintain the respect of his children, which could not have been done if he and they all went out courting together. And besides, a man of his position in the community and church could not afford to be having affairs with women. And so he chose a woman, he says, because they were nearly the same age, the same size and same height. He prescribed in advance the formula for a successful life together: admitting that he did not love her, he went on to tell her that he could *act* as though he loved her; "and if I *act* like I love her, she won't know the difference. And if she *act* like she love me—if she don't love me, I won't know the difference." But the marriage did not turn out as hoped. Though the patient said he had done everything to make this second wife love him, she would not obey him, she disputed with him, she has not treated his children as he wanted, and she has not satisfied him sexually. On several occasions, he threatened to send her back home to her family. Moreover his children began to pull away from him and the farm. One of his sons was subject to attacks, called epileptic. Various doctors and remedies were tried without result. The patient then resorted to prayer, but got no relief for the boy, who was finally taken in the summer of 1942 to the state hospital.

Rugged and vigorous though he was, there were times when the patient was sorely beset and the way seemed hard. Again and again in the face of adversity he would throw himself into his work, or he might sing and sing until joy came, or he might pray to God and praise the Lord and feel lifted—enough at least to get some relief.

In the early summer of 1942, the situation appeared very serious. It seemed to the patient that his crops would fail, his debts looked exceedingly heavy, his wife and his children were difficult, he was deeply concerned over his son in the state hospital. And then he received a notice that the boy had died in the hospital. In adding up the amount of money needed to pay off all his indebtedness on the farm, he had figured that \$2,000 was required. \$500 came unexpectedly from his son's insurance. The patient interpreted this as a down-payment from God on his debt. He thought the rest would come later and he recalled that the Bible said that we should cry for the newly born and rejoice at the outgoing. Thus the stage was set.

The *present illness* began early in August, 1942, when the family noticed that the patient was working unusually hard without appearing tired. He slept little and talked much for several days. And then one day about the middle of August, he was sitting in the pack house stripping tobacco with his daughter. He got up and while standing there looking at the tobacco, "the Spirit jumped on me and I went to crying, and I thought how good my neighbors had been to me. Well, I walked on out the door, and when I looked up at the sun, it looked light to me, and the light shined so bright I couldn't see nothing. And it looked like something said to me, 'Now if you don't jump up and roll over like a wheel, you ain't gwine to do like you said you was gwine to do.' And I just fell over and my heels went over my head, and I jumped up and walked on off, and then it looked as though something said to me, 'Now you holler and praise the Lord, and make a noise enough so He can hear you.' So I hollered just as loud as I could. I don't know what I said. I called on Mr. Hitler, I called on Mr. Roosevelt, I called on Mr. Jap, and I praised Jehovah God, and it looked like the sound would go clean over into England. Well, I walked on over to the house, just jumping up and down, and held my hands up as high as I could, and praising to the loud of my voice. And my son's wife, she come running, and I looked and there I seen my wife coming on out of the pack house like she wasn't paying no attention to me. I walked—I run to her and told her to praise Jehovah God. I said, 'Praise God, Mary.' I said, 'If you don't holler and praise Him, it will leave you, it will leave you, Mary. You got to holler to prove that the Spirit is on you.' Well, she didn't holler. She looked like she tried to say (in a whisper), 'Praise the Lord, praise the Lord.' I shook her hard and said, 'You got to holler, you got to holler to prove that the Spirit is in you.' And I walked off from there and I fell—right under a little old tree in my yard, and my little granddaughter walked around me, and my son's wife walked around me—and I was out of breath both—I couldn't do nothing but whistle and talk to 'em." His family got him in the house where he continued to be about as restless and talkative as when he was suddenly struck by the Spirit.

There was a time when the patient was filled with the ecstatic feeling that, if he could only get his white neighbors and all other folk around him to join him in prayer, that he would have the power through God actually to stop the war.

## FIRST DAY



STRIPPING TOBACCO



## SECOND DAY



108 DOCTOR'S BOOK

On the second day he again started to strip tobacco but talked so much and worked so little that his daughter advised him to go to the house and lie down. Rather than do that, he recalled that a white neighbor (Mrs. W.) had asked him to help fix up her basement. And he started to go over there. "And again I looked 'cross the field, and my son was out there cutting tobacco stalks, and I looked up and I hollered, 'Mrs. W. sent for me.' And I don't know what happened to me, but when I found myself we was talking about the church meeting—our meeting was going on at the church—and I commenced to holler just like the pastor said, 'Lord, I'll go. Go where you want me to go. Say what you want me to say. Do what you want me to do.' And then I went to preaching. I don't know hardly what I said, but when I found myself again I looked and saw my son coming on up the tobacco road sitting up on Mr. W.'s stalk-cutter machine. And I hollered, 'Yonder come—my darling son—riding on—Mr. W.'s machine. Praise God from Whom—all blessing flow—Father, Son—and Holy Ghost.' Then I say, 'Amen, Jimmie, O.K., boy.' And he was walking on after me, and I looked at him, and it looked to me like he was just as wet as he could be. And he said, 'Papa, where you think you gwine?' And I said, 'I'm gwine over to Mr. W.'s. That's where I'm gwine.' And he said, 'I'm goin' to catch you. You ain't gwine over there.' And I said, 'No, you ain't gwine to catch me. I'll outrun you.' And—well—I had on gum-boots, and I felt my foot and it felt so heavy. I done like I was going to run off. And he grabbed me. I said, 'Well, if I run I'll get too hot. I ain't going to run from you now.' He took me up and started to the house, carrying me, and I said, 'You'll obey me. You'll obey me and I'll obey you.' So he carried me on to the house. Well, I felt he was getting so tired, he was trying to run with me, and I was so heavy, and I said, 'Son, put me down and let me rest. If you don't you'll fall dead yourself.' He wouldn't stop, so I squeezed him a little bit around the neck and cut his wind off. I fell down on the ground, just as limber, and I say, 'Now you all let me rest.' And my son say, 'Papa, you are disturbing everybody,' and I said to him to 'Run tell Mrs. W. I don't mean no harm. I ain't trying to disturb nobody, and you run over there and tell her I ain't trying to disturb nobody, and after I rest a while you'll obey me and I'll obey you. Now let's get up and walk in the house.' I done rested and I went on in the house and got into bed."

The patient was shut in his room by his son. He had a doctor's book there, which he picked up. He then lay down on his bed and read. In the meantime his family had sent for a doctor. When he arrived, the patient hid the doctor's book, talked with the doctor—and in his own words, "I don't know what I didn't say" to him. The doctor apparently had no treatment to suggest. Things went on this way for a few days. During this period the patient describes the way he felt in these words:

"I was joy at heart that it was that way—I was joy at heart. That is why I couldn't stay still. I had to go talk with somebody and tell them how much joy. That's what run my children—they was scared I was going to tell too much, tell too much—I had them scared. They shut me up in the house and kept me there and got the doctor. . . . I wasn't bothered about it (money). I believed He was going to do what He said. And the people around got confidence in us, and we been doing—so I just felt like I was just willing—but I couldn't be still. I got to tell it. I told it up yonder."



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If you get at me, I'd have to tell it. Sing about it. I'd tell it now. I'd talk about Jehovah—didn't care what I was—'cause what is God? Who is God? I'm asking you that question!"

After a few days the family decided to send him to a hospital, put him in his Ford car, and drove him to Duke. He was given a room with 24-hour attendants, and continued to be happy and talkative, telling his story freely to all, and showing his excitement by the speed and intonation of his words rather than by actually moving around.

#### PHYSICAL EXAMINATION

Initial blood pressure 164/100, which later dropped to 150/90. Bilateral pterygii more marked nasally. Moderate arcus senilis. Physiological nystagmus. Many teeth missing, remaining teeth show considerable caries. Slight pyorrhea. Chronic hydrocele of tunica vaginalis, held in place by support. Blood counts, blood Wassermann, spinal fluid, x-ray of chest and heart, brain waves, all negative.

#### MENTAL STATUS

The mental status showed in addition to signs of mood disorder described in the history no significant parergasic distortions nor defect in memory or orientation. As to insight, he did not at first regard himself as sick, but later recognized the general nature of his disorder. An I. Q. was reported as 66 at a time when he still showed considerable excitement and it is not at all certain that this rating does the patient justice.

#### DISCUSSION

After an impending depression and a struggle against it, there was an abrupt revolt, in which there was a moderate increase in physical activity, and a marked excess of talk. The patient described the predominant mood as "joy at heart," and his good-humor was on the whole definitely infectious. It was mixed, however, with some bitterness against certain members of his family, his wife in particular. His thoughts ranged over many topics but came back repeatedly to the theme of praising the Lord. He was too distracted to work well. He slept little, but did not get tired. No grudges or ill-will were expressed against anyone outside his family. This was his first psychosis and the excitement cleared up within two months, apparently completely.

To understand the form taken by the patient's aggression, one should review the outlets open for expression of his emotions. There were three main channels—work,

family, religion. These have always been at hand, socially tolerated, and even encouraged. At first his religion stood merely for social activity. Later there were added some of the emotions embodied in the Negro religious meetings of his community. Finally he learned to "hum" to himself, or to sing, and to pray and to praise the Lord, when he felt somber or sad in spirit. He tells how he could change his feelings if he would only act as he wanted to feel and if he would keep it up long enough. He could thus turn from despair to contentment—with some insight. Quite independently he discovered the James-Lange principle for himself. In the words of James, "We do not cry because we are sorry—but we are sorry because we cry." Charles Lawson puts it this way: "If you keep lookin' sad, you'll get sad!"

Furthermore, domination and obedience played prominent parts in his life since childhood. His father was stern, and the patient soon learned to obey. When the head of the family himself, he in turn became domineering and demanded obedience inside the family. In the community, he obeyed the law, paid his taxes, and prided himself on having the confidence of everyone. That meant of course that he lived well within the social structure of the group, apparently accepting it completely, certainly not challenging it. And now in his religious outpourings, he sings over and over: "Lord, I'll go, Lord, I'll go. Go where you want me to go; say what you want me to say; do what you want me to do!" And here is obedience to God.

But there is also another note. Again and again he turns to praising the Lord. Through prayer and song and praising God, he wins a place in His sight. And of course the Lord rules over all men. With the support of the Lord he starts out to gather all his neighbors, Negro and white, and when he succeeds in bringing them together in song and prayer, he believes he will have the superhuman power even to stop the war.

Even in the manic psychosis characterized by unmistakable aggression, the patient did not break away from the socially permitted route to power through religious ecstasy. Favored by God, he had won a superior place, had left the depressing situation behind, was no longer bothered about social and economic



difficulties such as money, and yet he did not disturb the existing social structure of the community the least bit. There was no hint of aggression against anyone outside his home. He used the familiar outlets at hand—work, family, religion—and through them he managed to jump the restrictions of ordinary life and he accepted by the Omnipotent One—chiefly through *obedience* and *praise*. Incidentally, these are effective tools for getting along with lesser masters than the Lord! And all this was done without offense to anyone outside the family.

Treatment of the patient began when his family shut him in his room in the house on the farm. This had rather little effect. He was then brought to the Duke Hospital, where a quiet schedule for a month was accompanied by a considerable reduction of his manic activity. However, he was still somewhat over-talkative on his return home, and showed a good deal of bitterness toward his wife. The arrival of one of us (E. J. W.) a few days later as a guest on the farm came at a time when the patient was about to send his wife back to her family. The presence of the visitor softened his attitude. Four days later the patient and the whole group around him staged the re-enactment of his illness. Practically all entered in with willingness, interest, and at times a little amusement. Only the wife was very quiet and serious. But even she seemed to go through her part quite readily.

We are aware of the impropriety of using the word "psychodrama" for the enactment of the illness by the whole family before the camera, inasmuch as we disregarded some of the cardinal points insisted on by Moreno (13, 14). We asked that events be acted exactly as they took place. We used the same people in the acting who took part in the real drama three months before. The lay-out of each scene was talked over in advance, and parts were even rehearsed on some occasions. We were glad to see a good many smiles creep into the planning of the scenes, in contrast to the rather deadly seriousness of the original episodes. We aimed our "therapy" at the whole group and not just at the patient, among some "auxiliary Egos."

Comments by the patient and by his children gave reason to believe that this "psycho-

drama" resulted in considerable lightening of the feelings which had previously existed. For example, the patient said that thoughts of his psychotic experience had previously stirred up very intense feelings in him. But after the acting he commented that he had learned how to take them. He could reflect upon them and laugh, but still he could not understand why he behaved as he did in some instances.

His life-long insistence on the value of "acting" the part he wanted to play in time of trouble may have increased the therapeutic value of this sort of "psychodrama" for the patient. However that may be, it seems likely to us that the idea can be expanded still further. There is a rather definite histrionic ability in many Negroes which could make the enactment of such scenes relatively easy and effective. A considerably wider application could probably be made, provided that it is done under conditions which bring in a moderating outside influence, some humor, and the objective perspective of more or less distance away from the original emotion crises. Really deep or penetrating treatment for such patients is not wanted. A decrescendo may then be obtained, in contrast to the crescendo of feeling which so often builds up to the point of abundant overflow in many Negro spiritualistic meetings. Sensitive spots were certainly desensitized to considerable extent by the psychodramatic procedure which was carried out in the case of the patient reported in this paper. On the other hand, it is perhaps even more important to stress that there was a time, earlier in the patient's stay in the hospital, when talk of acting out the critical experiences in his psychosis served to heighten rather than reduce his excitement. Before this sort of psychodrama could be used as a general form of therapy for the countryside, its limitations would certainly have to be considered.

There remains only a word to be said about the organization of the case-material and its use for teaching purposes. The case reported here is only one of many which have been "canned." Either lantern slides or moving pictures preserve more or less of the appearance and activity of the patient. Sound records add the patient's account of himself. The combination can then be used

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simultaneously or seriatim to present the clinical data considerably more vividly, we believe, than can be done from the written records. A fairly large number of these "canned" patients can be reviewed with the students in short order, and they can be counted on in class to show just what is expected every time at the proper time in each case.

The main draw-back is the time required to work up each case properly in this fashion. A few patients are reluctant to let us make these photo and phonographic recordings. We have never overridden their wishes, and furthermore we have so far refused to make any recordings without the knowledge of the patient. Accordingly we have lost a few desirable recordings. Moreover some patients lack the spontaneity which would have existed if there had been no microphone and no camera. The cost in money, however, is not prohibitive.

Of course this manner of teaching is not regarded as a final ideal. It is only a step aimed at familiarizing the student with some aspects of psychiatry either before or along with his direct contact with patients in the clinic. Eventually the student has to learn to obtain, select and interpret the material himself.

#### SUMMARY

A 57-year-old rural Negro of unusually rugged and independent disposition, owner of a 150-acre farm, went through a series of depressing incidents prior to the build-up of hypomanic activity which terminated with psycholeptic suddenness in the outbreak of a definite manic attack.

In the excitement he praised God, sang and shouted, with the feeling of satisfaction and even power through his allegiance to God. In so doing he obviously was acquiring a position above that of any person in the community, even in the country, if not in the world, without in any way challenging the social structure of the society in which he was living, since religious exaltation is one of the few outlets he has always been encouraged to find.

Treatment included a period of rest in the hospital, during which the patient gave an account of his whole life, including the ex-

citement, and this story was recorded on a series of sound records which were later edited. After return to the farm, the acute phases of the psychosis were re-enacted by the patient and his family before the camera. This re-enactment was said by the patient and his children to have had a beneficial effect on his feelings about his psychotic experience.

Note is made of preserving clinical material for later presentation by means of edited sound records with enough photographs to pictorialize significant scenes.

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## THE MEASUREMENT OF REMEMBERING<sup>1</sup>

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There is a lack of satisfactory methods of measuring the degree of remembering in individuals showing abnormal behavior patterns. In this situation, distortions and limitations of remembering may occur to a degree which has no counterpart in the day to day functioning of the normal individual. The methods useful in studying remembering under ordinary circumstances have a limited utility in the field of abnormal reactions. Methods which are customarily used are for the most part based on two general theories. The first is based upon the observation that the degree of meaning which the material possesses for the individual will exert an appreciable influence upon the tendency to remember it. The unique contribution of the Ebbinghaus (1885) technique consists in the use of material which is as devoid of significance as possible. The second theory postulates that if our findings concerning remembering are to have real and practical significance the material presented for remembering must resemble that encountered in day to day life. This has been described as the legend method (Philippe 1897). Both basic methods and their numerous modifications call for the presentation of the material to the individual and for attempts to obtain his reproduction after various intervals of time.

The employment of such procedures in patients suffering from impairment of memory arising from brain damage is difficult because the speed of forgetting is frequently so increased that the patient is unable to remember even momentarily a series of nonsense syllables or to remember the beginning of a legend by the time he has read to the end of it. To meet this difficulty, two tests have been devised. Preliminary reference has been made to these (Cameron, 1943). They are described briefly below and then discussed in detail in separate sections.

*Counting Test.*—The first test consists in

requesting the patient to count up to a given number, and recording on a stop watch the number of seconds which he required to count up to the highest number which he can get correct. The patient with a serious defect of recent memory will find that if the counting takes more than a limited number of seconds he is unable to remember the number at which he was told to stop. The value of the number given him is decreased or increased until it is ascertained which is the largest number to which he can count correctly. The time taken to achieve this represents his limit of remembering in terms of this type of material and this form of presentation.

Emphasis must be laid on the fact that this test has definite limitations. When the patient is capable of remembering for more than 80 seconds the test will rarely demonstrate any defect. Our working hypothesis concerning this phenomenon has been that where the patient retains that degree of memory functioning he also retains the capacity to set up centers of secondary activity, i.e., he is able to carry on more than one activity at the same time. Under such circumstances, we have several times found patients who were able to count up to the higher numbers by keeping such numbers "in their minds" while they were counting. Those who cannot remember well enough to get up to the higher numbers were unable to do this.

*Interference Spelling Test.*—This test was designed to meet this difficulty. Our objective was to work out a test which would prevent the carrying of the material "in the mind," or at least make it more difficult to refer back frequently to the material. This was achieved by presenting to the patient the material to be remembered and then having him perform a task of such difficulty as would require his full attention. The material to be remembered consisted of 3-digit numbers which were repeated aloud three times to the patient; the interference

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material consisted in 3-letter words which the patient was asked to spell. His performance was evaluated in terms of the duration of time over which he was able to remember the material. During the whole period between presentation and the point at which the patient was asked to remember the number, he was kept at work on the interference material. This test, while less easy to quantify than the counting test, was more searching and permitted us to estimate the capacity of those who were able to remember for more than 80 seconds by the counting test.

### COUNTING TEST

The method of carrying out the test can be readily seen in the verbatim record given below. The patient is asked first a few simple questions to determine qualitatively his orientation and general mental status. Phrases enclosed in parentheses indicate the examiner's questions. It is evident from the replies that there is some impairment of memory. The patient was a 70-year-old man with moderate arteriosclerosis.

(How are you?) Very good . . . . taking a rest after the day . . . . tough day today, yes . . . . the day is . . . . well, just make it good—just lay down for a little while, saving work for tomorrow—have to be on the job. . . . (What day is this?) Well sir, now today—let's see—Friday, now or not? You got me sir—you got me. . . . Only that it's up. . . . (What's up?) (What's up?) (laughter)—the door, I say—the door, the door. . . . Well, it's the fourth of the month anyway, my boy (true date, 21st)—It was a new day—mean and hard . . . . but . . . . just take it. . . . (Now I wonder if you would count for me. . . . (Can you count?) Sure, 1, 2, 3 . . . . (All right, then count up to 10 for me and then stop. Now what number did I tell you to count up to?) Ten (That's right—go ahead).

|                                                                                                                | No. designated to patient. "Count to —, then stop" | No. to which pt. counted | Time | Scored: Success, failure |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|------|--------------------------|
| 1.                                                                                                             | 10                                                 | 10                       | 13"  | +                        |
| 2.                                                                                                             | 14                                                 | 10                       | 18"  | —                        |
| (Now what number did I tell you to count to?) Ten—count up to whatever—I counted up to ten anyway—ten, my boy. |                                                    |                          |      |                          |
| 3.                                                                                                             | 6                                                  | 6                        | 8"   | +                        |
| 4.                                                                                                             | 17                                                 | 18                       | 25"  | —                        |
| 5.                                                                                                             | 15                                                 | 10                       | 15"  | —                        |

|                                                                                 | No. designated to patient. "Count to —, then stop" | No. to which pt. counted | Time | Scored: Success, failure |
|---------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|------|--------------------------|
| 6.                                                                              | 12                                                 | 12                       | 14"  | +                        |
| Now that's enough to count—no more. (Just a few more) Now what is it? Go ahead. |                                                    |                          |      |                          |
|                                                                                 | 12 (No. repeated to patient.)                      | 12                       | 14"  | +                        |
| 7.                                                                              | 16                                                 | 16                       | 21"  | —                        |
| (Counted to 16 at 21", continued counting to 18)                                |                                                    |                          |      |                          |
| 8.                                                                              | 23                                                 | 23                       | 23"  | —                        |
| Now you want to do it quick—I ain't got all night.                              |                                                    |                          |      |                          |
|                                                                                 | 23 (No. repeated to patient.)                      | 18                       | 23"  | —                        |
| 9.                                                                              | 24                                                 | 24                       | 24"  | —                        |
| Did you say 24? (That's right.)                                                 |                                                    |                          |      |                          |
| 10.                                                                             | 6                                                  | 6                        | 5"   | +                        |

As these trials are carried out, a chart showing success and failure is simultaneously drafted. After the first four trials of the test above, the skeleton chart would appear as follows:

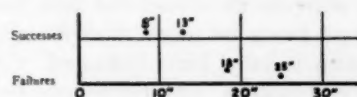


CHART 1.

The span of effective memory can now be roughly assessed to be between 13 and 18 seconds. The ensuing trials test the memory between about 5 and 25 seconds. That is, the patient is asked to count numbers which apparently fall within this critical time interval—the intervals during which we see him pass from easy successes to definite failures. After six more trials, the chart appears as follows:

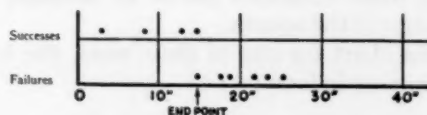


CHART 2.

The patient's last success is at 14", his first failure is at 15". This is a sharp endpoint,

and we may say that the patient's memory for a task of this kind has been reliably measured. If the endpoint had not been made clear by this small number of trials, additional ones would be undertaken until the point at which successes gave way to failures was definitely established. This endpoint usually shows some over-lapping of successes and failures. In order to meet this difficulty, the method of evaluating the results may be modified so that not the longest period of remembering is taken but that finding which has an equal number of successes and failures above and below it. (Indicated by arrow in chart 4.)

In some cases, this endpoint could not be accurately determined. Two reasons for this are apparent. Some patients manifest a memory span which fluctuates from one moment to the next depending upon factors of attention and fatigue. The second reason for failure to ascertain a sharp endpoint lies in the patient's refusal to continue counting after a certain period of time. Certain patients will count to indicated numbers again and again without resentment; others display reluctance after a few trials.

The reliability of the counting test has not been statistically established. However, in the 25 patients to whom the test has been given two times or more, corroboratory results have usually been obtained. One patient, for example, was tested six times on successive days with the following results.

| No. of test | Best or last success (secs.) | First failure (seconds) | Mean endpoint (seconds) | No. of trials used to est. endpoints |
|-------------|------------------------------|-------------------------|-------------------------|--------------------------------------|
| 1.          | 10                           | 7                       | 10                      | 10                                   |
| 2.          | 11                           | 8                       | 10                      | 9                                    |
| 3.          | 15                           | 9                       | 10                      | 16                                   |
| 4.          | 11                           | 6                       | 7                       | 23                                   |
| 5.          | 10                           | 8                       | 9                       | 24                                   |
| 6.          | 24                           | 10                      | 13                      | 31                                   |

CHART 3.

The endpoint ranged from 7 to 13 seconds—on three occasions fell at 10 seconds, the average of the means.

The chart for one of these tests, the fifth, appears as follows:

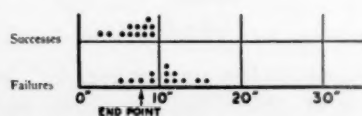


CHART 4.

There is a relatively sharp endpoint in this case; the next day the endpoint was less clear cut, the chart appearing thus:

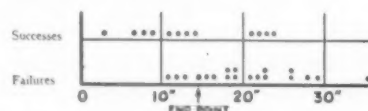


CHART 5.

The other four test periods yielded endpoints somewhere between these two.

### INTERFERENCE SPELLING

In the second type of test, interference spelling, the patient is asked to repeat a 3-digit number given by the examiner. The number is repeated three times, and the patient is then asked to spell one simple word after another. After a spelling interval of, say 10 seconds, the patient is asked to recall the original number. He is then scored on the basis of the number and the order of the digits remembered, from 0 for complete failure to plus 3 for all three digits recalled in correct order. If he succeeds at 10 seconds, he is asked to spell for a longer interval before recalling the number, until partial failures begin to appear and finally complete failure. The largest practicable interval of spelling is about 80 seconds, in this test as well as in the counting test. The shortest feasible spelling interval is about three seconds—the time required to spell out one such simple word as "cat." A basal level is computed as for the counting test and similar uses made of it. The interference spelling test is somewhat more complex than the counting test and requires a somewhat more complex method of quantitative scoring. However, a glance at the chart roughly indicates the memory span for this type of problem. The chart below is that of a 72-year-old man whose span on the counting test was 56 seconds. In the interference test failures appeared at a much earlier level.

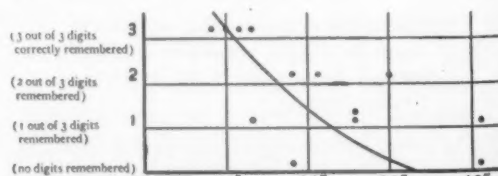


CHART 6.



The last complete success (3 out of 3) is at 13 seconds, and the first failure (1 out of 3 recalled) is also at 13 seconds. This is one utilizable score. A rough curve can be drawn through the different levels of successes; the center of this curve falls at about 21 seconds; this is a second utilizable score. Obviously, more complex methods of quantification are conceivable. For example, the two upper lines of the chart may be considered the success areas; the two lower lines the failure areas. A division on this basis would make the chart appear thus:

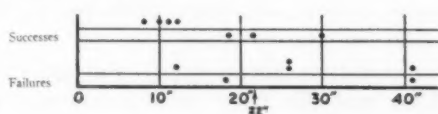


CHART 7.

It now resembles the chart used for the counting test. If the same method is used to determine the endpoint, it falls at about 22 seconds.

The span of memory yielded by means of the interference spelling test is a reflection of a higher level of remembering than that required in the counting test. A memory span of 10" to 15" as measured by the interference test is the equivalent roughly of a span of 80" on the counting test. Patients whose memory was adequate to cope with the counting test up to 80" frequently revealed deficiencies at the level just beyond—failing on the interference test at some point over 15 to 20 seconds.

The interference test like the counting test was valuable for time intervals up to about 80". After a spelling period of more than 80 seconds the patient often lost interest in the problem. Moreover, in most patients it was apparent that few failures occurred after this point (80") in those able to attain it.

#### CONCLUSION

Two tests of memory have been devised to measure the remembering ability of patients with severe memory impairment of organic origin. In this study, the patients were seniles with behavior disturbances sufficient to require hospitalization. One test permits measurement of memory defects of marked degree; the second test measures defects of lesser severity. The methods of giving and scoring the tests have been outlined in detail. It is important to emphasize that the values obtained by these methods are to be expressed in terms of the particular test used. For the present, at least, they must be considered as relative rather than absolute.

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## FOUR YEARS' EXPERIENCE WITH MUSIC AS A THERAPEUTIC AGENT AT ELOISE HOSPITAL<sup>1</sup>

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Limited time makes it impossible to enter into details of four years' experience with music at Eloise. We shall confine ourselves, therefore, to the broader theoretical aspects, the general principles, and the major techniques.

Dr. Samuel W. Hamilton in his preface to *Music in Institutions* by van-de-Wall expresses the following fecund thought: "Medicine, music, engineering—indeed every body of knowledge or practice—lives through a long period of empiricism before it can be formulated and passed along by any method except the most intimate apprenticeship. It is but yesterday that fever therapy was put under control for the benefit of the victims of a certain disease of the brain. Liver has been a foodstuff for ages, but only a few years ago we learned that a baffling and formerly fatal disease can often be checked by its use."

Why does music affect human beings? Because tone and rhythm, put into proper order, appeal to the pleasure principle. Musical rhythm, which has a strong affinity to bodily rhythm, affects the Id, offers an opportunity for the ego to indulge in open eroticisation as in "jitterbugging." The raw material of music is intimately linked with instinctual drives. Nature makes use of "music" in its work of sexual selection and self-preservation. Charles Darwin referred to music as "charming" and "fascination"; his concept of music was that it possesses a sort of hypnotic influence, the male animal using it to overcome the instinctive coyness of the female. Whether the music is self-made as in the stridulating insect, the drumming of the sniper's tail, or the singing of the birds; or by man-invented instruments, is another question. The chief point is that music has the property of *attracting attention* by appealing to the

pleasure principle and by arousing interest. According to W. Cannon, ". . . music arouses emotions and releases adrenalin and perhaps other hormones." The capacity of music to arouse emotion can be linked with the biological evolution of music. Biologically, the sound is used to lure, to convey, to warn, and to challenge, and appears far down in the animal scale.

The collective unconscious—the myth, the folklore, and the fairy tale—intuitively acknowledge a supernatural power in music. According to various folklore, music can restore the dead to life. A belief exists in India that some tunes called "ragas" can ". . . darken the sun, others may affect the growths of plants and animals, cure diseases, or influence the change of seasons. . . ." Practically every race had its Orpheus and Pied Piper. The ancient Greeks regarded music as a healing agent. Apollo was both the God of Music and Healing, and Aesculapius, his mythical son, was the traditional patron of medicine. The Greeks also keenly recognized the social educational and prophylactic values of music. One of the seven Muses, Euterpe, was the patron goddess in charge of promoting civilization.

That music exercises a powerful physical, mental, social educational and aesthetic influence upon human being needs no further emphasis. Ethnological research, individual observation by competent naturalist and musician, and psychological experiment have proven its influence beyond any doubt. The attention at present is being shifted to the study of the structural elements of music, the divergencies as to pitch, inflection, and pause, and their respective physiological and psychological influence upon the human organism. It is amazing that with such a large body of information and observation regarding the various properties of music, little has been translated into practice. One would expect that a medium which affects emotion, the endocrines, the circulation, the respiration, the blood pressure, the mood, associa-

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

From Eloise Hospital and Infirmary, Eloise, Mich.

tion and imagery, would be worthy of further investigation.

The musical tone produces a sensation. Its first appreciation possibly occurs in the thalamus, the seat of all sensations, emotions and feelings. The thalamus and its anatomical and physiological relationships to the cerebral hemispheres, we feel, is a factor of considerable importance in understanding the workings of music. The receptor and effector mechanism in the thalamic region (including the subthalamus) is more simple, prompt and automatic than in the cerebral hemispheres. It is similar to that of the spinal cord reflex. While the spoken word must appeal to the cortex, music may do it on the subcortical level. This property of music to stimulate on the subcortical thalamic level is the basic factor in music therapy. In the schizophrenic, for instance, where feeling and perception replace reasoning, the spoken word has little or no effect and the subcortical centers are the only levels accessible. We feel that because of "functional decerebration" encountered in schizophrenics, the automatic reaction to music is increased.

The so-called "thalamic reflex" is a non-cortical response to music. It offers an objective guide in the study of the effect of music upon mental patients. Patients considerably distracted or withdrawn can be made to respond to music unconsciously. This response does manifest itself in the form of a tap of the foot, swing of the body, or drumming of the fingers which is in time with the music tempo.

If one keeps in mind the intimate and close relationship between the thalamus and cortex, the free flow of impulses between the two, the full significance of the thalamus as a factor of transmitting musical impulses to the cortex can be appreciated. Mental patients difficult to reach through the spoken word, are still accessible rhythmically and tonally via the thalamus. During music sessions on the wards, one can observe mental patients who, after responding for a while unconsciously, later begin to respond consciously.

#### THE ISO-PRINCIPLE

Various techniques and special manoeuvres may facilitate the response of mental patients

to music. The "iso"-principle, or the principle of using music identical to the mood or mental tempo of the patient, has been useful. It was found that depressed patients, for instance, can be aroused more readily with sad than with gay music. Maniacal patients, whose mental tempo is faster, can be aroused more quickly with "allegro" than with "andante."

#### THE PRINCIPLE OF LEVEL ATTACK

*Rhythm.* The mobilisation of attention and prolonging of its span can be more easily achieved if one begins with music which appeals to the lower brain levels. Musical rhythm which has a strong affinity to bodily rhythm is thus used first. Musical rhythm stirs and stimulates the kinesthetic sense because the feeling of bodily rhythm goes through kinesthesia. The child, feeble-minded, and psychotic respond to rhythm. Stress, duration and pause, so typical of musical rhythm, act as isolated shorter stimuli in contra to melody, for instance, which evokes more prolonged response.

*Melody*, which is played next, is a succession of musical tones felt as a psychological entity; its capacity of holding attention is thus much greater. It is prepotent in the consciousness for it forces itself upon it because of its continuity.

*Mood-modifying* music is played after melody. Its purpose is the arousing of emotion and modifying the mood.

*Harmony*, which follows melody in the musical prescription scheme, is a higher form of musical evolution. According to Valentine, a change in orientation to harmony occurs at about the age of twelve. It is, therefore, a capacity which human beings develop later in life and must be considered as sensed on a higher level. Harmony also has a general integrating influence.

*Pictorial-associative* music stimulates imagery and associations. This trend is already present in the mood-modifying music but it reaches a higher intensity in the pictorial-associative music.

It is realized that there are no musical designs which are purely rhythm, melody or pictorial. We therefore select music which is either predominantly rhythm, melody, pictorial, etc. We have even attempted to write

synthetic music in which a given structural element is emphasized.

Bringing music into the mind of the patient means bringing into it basic realities in the form of feelings, perceptions and imagery. Such material is capable of replacing states of phantasy, hallucinations, illusions or fears. If even temporarily, such replacements are of therapeutic value.

The presentation of music in the sequence R-M-H-M-P is practical in another respect. On the wards, where there are patients with different types of psychoses and degrees of lucidity, some of them can be reached by rhythm, others by melody, and still others by pictorial music.

We have been exposing the patients to music of a trio (violin, cello, piano) for we feel that mental patients are more susceptible to this kind of combination of tone color than to a combination of brass instruments.

The familiar tune is to be mentioned. The familiar tune does not only revive an engraving—a basic reality—but helps to relieve emotional tension. Through a familiar song or melody, as in psychoanalysis, pleasant or unpleasant experiences can be abreacted.

To further increase the effect of music, an analysis of various factors is made preliminary to the therapeutic attack. Thus the mean age, percentage of nationalities, type of psychosis, and residence of the patients in the hospital are noted. If there are, for

instance, 60 per cent Americans, 15 per cent Polish, and 5 per cent Italian patients, the music is allotted accordingly. Patients exposed to numerous and various kinds of music are bound to react to one kind or another. By exposing the patients to five kinds of musical elements, there is not only a chance of reaching a greater number of mental patients, but of stimulating the same patient on various levels, viz., instinctive, emotional and intellectual.

The theme song is used as a conditioned stimulus. Patients are not forced to attend the sessions, but the theme song suggests that they come.

There is a bright outlook regarding research on music therapy. The electroencephalograph promises wide possibilities. The Davises of Boston found that musical sounds are capable of influencing Berger rhythm. Thus, it will be possible, in the future, not only to register the effect of structural elements and simple compounds of music upon Berger rhythm, but even of symphonies.

The physiological and psychological effect of music, its social, educational and esthetic attributes, place music into a rank no other therapy can measure.

It is true, of course, that considerable study and research are to be made before music can take its place among the other legitimate therapies.



## ETIOLOGY OF MENTAL DISEASE, A CHANGING CONCEPT<sup>1</sup>

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In the study of psychobiology, the nature of the material makes difficult the attempt to find exact causes, for past data—in the form of memories, phantasies and emotional attitudes—are still actively present. Associated with a phenomenon to be explained, there are thousands of possibly relevant items, so that until a clear idea of the significance of cause is attained we are not likely to assign matters to their real sources. To discover what has been thought about factors contributing to mental illnesses, a study has been made of hospital case records over a twenty-four year period, with special reference to the entries on the face sheets under the heading of "etiological factors." The causative items as listed fell into two significantly different groups reflecting a developing psychiatric insight. There was little change in the records of the first thirteen years, but from the start of the latter period something had begun to happen. A typical period was chosen representing the earlier years and another illustrating the newer tendencies. The following are some of the reflections this material stirred:

Through the year 1921, almost half of the case records indicated the etiological influences as "none." This does not mean that there were no causative factors, because the histories contained definite indications which would today be seized upon, but the focus of psychiatric thought was then differently directed. The causes listed were almost always single ones, as if one seed had been planted which quite by its own efforts had produced the illness. For instance, "loss of job" was found in several records as the sole reason for a mental illness.

Very frequently the conditions were said to be due to purely external causes, such as "business reverses" or "shellshock." Perhaps this represented a lingering influence

from the Kraepelinian manner of description, which tended more to note proximity than to explain why things took place. Very occasionally, hints of the psychodynamic situation were recognizable. Thus, while one man got sick because of "business reverses," another case was attributed to "business worries." Another history gives "business worries (imaginary)," showing a confusion of cause with effect. Many times in 1921 the only etiological facts stated were the occurrence of epilepsy or psychosis in the family. Not once did such a statement refer to the patient himself, as if for instance there had been written "fear of having a psychosis like father's." There was no stable attitude towards the problems of etiology. Further statements of cause were: "overwork"; "high blood pressure"; "stress of recent war"; "uncongenial environment"; "morphin" or "denied." Note the air of finality and exactness in such unit pronouncements. Factors in the psychology of the medical staff were also evident. After a score of cases with etiology stated as "none," there was another with "none known" entered, and still another with "none; masturbation."

In records of ten or more years later a very different approach to the questions of causation is evident. Contrasts show the growth of understanding in that period. Two men with similar problems are listed thus: "marital infelicity"; and "domestic friction due to wife's inefficiency and mother-in-law's dictation." We read of one case: "uncongenial environment": and of another: "heredity; unpleasant early home life; rebellion at authority; personality difficulties; sexual dissatisfaction; friction in living arrangements." Where earlier was found merely "syphilis," there nowadays appears a more humanized and meaningful statement, such as: "lues; constant worry over infection." The type once put simply as "arteriosclerotic" has its counterpart in a man with the same diagnosis whose etiological factors are given as: "heredity; arteriosclerosis;

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Mich., May 10-13, 1943.

chagrin over brother's misconduct; own money losses."

With this listing of plural factors, with reference made to problems of personality structure, with attention drawn to the stresses of an individual's adjustment to his external surroundings, there is a great difference in the concepts of therapeutic goals. Having more clear-cut vision of the issues, the psychiatrist is in position to plan for deeper investigation and for rational treatment. As a basis for further discussion, there are given here some actual case etiologies from records of the later years:

1. Stiff personality; loss of job; domestic unhappiness leading to separation from wife.

2. Heredity; constitutional lack of initiative; difficulty breaking home ties; worry over loss of job.

3. Narrow life with only intellectual interests; financial loss through blackmail; conscious homosexuality; concern over not completing tasks in his lifetime.

4. Favorite child; dependence on sister; vocational dissatisfaction; few friends; strict standards.

5. Heredity; worry over family illness; disappointment at daughter's engagement; uneasiness at lessened income and increased costs; pain and insomnia from carbuncle.

In such groups of factors, several principles are significant. One is the striking difference in force which a given phenomenon may exert in different persons. One man whose store burns will simply rebuild, while another will develop a reactive depression. Being an only child means one thing to the rich, another thing to the poor. Syphilitic infection does not produce in the non-susceptible the psychoses which other individuals develop. Cause is not inherent in the mere facts but rather in the inter-relationship between the facts and the person with all his individually conditioned qualities.

Although the various etiological labels sound so numerous they arise from a few fundamental forces. We must recognize the basic issues in all sorts of life situations, and in whatever phraseology. By recalling that values are determined by the degree of satisfaction of a few primitive urges, we shall be able to realize the reasons for what we

find, to understand the reasonableness of the patient's symptoms, and to have an indication of suitable therapeutic methods. We must develop the ability to see through the details of causes to their actual structural form, a form which is dependent upon the specific affective-instinctive pattern involved. It is not the loss of a job that would be a causative fact, but the inner meaning of it—the threat to security. This might be either a blow to psychological security, supposing one had been unjustly discharged, or an attack upon actual physical maintenance if daily bread was threatened.

We may be nearer to the truth when we dispense with some of it. We may be blinded to the real issues if too detailed attention is given to minutiae. There are differing paranoid delusions with unlimited variations in details which we might catalogue and study. More to the point would be to discard the embroidery of details and to have before us the meaning and the adequate cause for them, which would read: "My relations with men both gratify and trouble me." It distorts significances to view them so closely that their structure and relationships are not apparent. Mr. T. O.'s manic illness was first understandable when, through great masses of specific material, it was discerned that his instinctive efforts at self-expression and independence had persistently been thwarted, and that in his psychosis either they attained satisfaction and he was happy, or they were interfered with and he became angry. Once we can get a clear view of how the main instinct drives are striving, and of what success they have, we can grasp the meaning for the patient of his symptoms.

The development of the personality, the lines along which it becomes habituated, the degree of elasticity and flexibility it preserves, and the lacks and incompletenesses of its facets, are of the greatest importance in matters of etiology. What we speak of as a "well-rounded" personality means one which has become practiced in making efficient and comfortable responses, one with resources to protect the individual against the displeasures and hazards of psychic life. We should therefore make a careful study of a patient's personality balances and habits when searching for the causes of his troubles.

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They are the personal variants that determine for each individual the importance to him of the factors arising in his life. Thus, one patient develops a melancholic, delusional illness and commits suicide because of the wound he got from being misunderstood and under-valued, but a man of different personality might respond to the same facts by creating a fictitious exalted identity and sneering at the world.

Certain issues call for evaluation in every case, because of their universal bearing upon the capacity of the person to withstand the constant buffeting of life. The contacts and attachments he forms with other persons, the relationships with parents, wife, business and friendly associates, may be situations of causal import. Mr. B. spent most of his 59 years with and for his mother who ruled him firmly. When she died the greater part of his relationships to the world were altered. The meaning to him of the external fact "death-of-the-mother" was totally different from that of the same fact to Mr. H. who has devalued his mother to the point of not recognizing her when she visits him. Another type of causal situation concerns the degree of financial security, and the opportunity for obtaining gratification with money. Actual changes in this realm are frequently found as causal influences, as are fancied or threatening changes, as when one fears the loss of his position. Other important etiological facts lie in the anatomical-physiological sphere. A person with a chronic myocarditis, or an unsightly deformity, or advancing age, or cleft palate, has a basis for the development of mental illness, due either to physical or to psychological-emotional causes, or to a combination.

But if an individual with cleft palate becomes sensitive and seclusive over his deformity, and broods himself into a reactive depression following continued teasing, what was the cause? Such a problem presents multiple items none of which could be omitted, for no one of them alone would have produced the illness. There is also a significance in the sequence of events; we are dealing with an organized and complex situation.

A precipitating cause is one which has only set more adequate forces at work. Mr.

A. F. illustrated this point. He had gotten along in life without especial difficulties until he had the misfortune to come in contact with a high powered electric circuit. He was severely burned, requiring amputation and skin grafting. Such an experience seems sufficient to lead to mental illness, as it promptly did in this instance. But it is of interest that the symptomatology developed was a classical schizophrenic picture. Evidently the causes for dementia præcox were present and ready to be effective when activated or when consummated by the addition of one last straw.

Another illustration of the precipitating cause is that of Dr. J. W. Just before medical graduation near the top of his class, he developed a slight ringing in the ears, later determined to be a mild otosclerosis. This was the immediate reason for a protracted mental illness which stopped him from graduating and put him in a hospital where for months he was depressed, agitated, and felt his life was ruined. Explanation of his illness lay in predisposing factors which determined that the precipitating cause should have an especial significance in his particular case. To someone else a bit of buzzing in the ears would have been merely a nuisance, but to him it had a releasing value for problems he had not yet solved. He was about to leave the protecting shield of school and of home, where he had been admired and honored. Instead, he would face competition. He had already had several rebuffs by not securing internships he thought would be laid at his feet. His chosen profession began to seem less of a rosy triumph than he had anticipated, but pride would not let him unburden these misgivings. He would have liked to abandon the whole thing and run home to his mother, who for many years had herself been incapacitated by deafness and was ready to sympathize with such an affliction, but not with his being a quitter or a failure. It was thus that a relatively trivial circumstance acquired such an importance, and effected the precipitation of an entire illness.

There is another type of etiological factor which re-animates some former influence and restores its activity, which could be termed a reverberating cause. Anxiety states may



be recreated by some happening capable of again animating certain factors. It matters little whether old wounds are re-opened by the identical instrument or by some other one; they bleed alike. In the case of Mr. A. M. all the one-time helplessness and frustration of the child who discovered his lack of omnipotence was restored to power over him by a series of troubles. His financial resources gave out; his wife died; his highly specialized job faded out from under him. His being driven into an inactive depressive sickness by these influences represented a re-echoing of a distressing period of similar psychological meaning passed through in earlier years. Most people have something, usually many other things, in their activities, interests and surroundings, which steady them when under fire. This man unfortunately seemed to have literally no other resources when his troubles came, with which he could dilute the effects they produced.

A causal factor which is especially illuminating is the setting in which a patient recurrently becomes sick. One man developed a psychosis each time his wife bore a child. Another had repeated difficulties when his business position was advanced. With a third, episodes of psychosis came again and again when his unconscious homosexuality stirred towards recognition.

It is noteworthy that we are prone to look at predisposing and precipitating factors chiefly in connection with the patient's getting sick. We are likely to assume that the causes of changes occurring while under treatment are different from those which produced the psychosis. But it cannot be so. People are steadily, uninterruptedly, being driven by their instinctive urges. In the hospital we see the effects of changing external influences upon the patient, and the com-

plex fluctuations of inner trends and the results of these. Often they are followed by improvements and by recovery. It is quite as valid to demand the causal facts involved in getting well as in becoming sick. If we knew more about reasons for getting well we would better understand the losing of health.

But though the topic is so inclusive, it does not actually cover so much territory as might appear. Merely that some phenomenon is present does not make it an etiological agent. That homosexuality exists in a patient no more gives it causal efficacy than does existence of the spleen. Except for structural factors such as environmental circumstances or anatomical-physiological conditions, only those facts can be considered to have etiological value in mental disease which involve the quality and the gratification of the subject's affective-instinctive tendencies. If one reacts to his homosexual component with a specific emotional response, whether it be joy or fear or guilt—it is the latter and not the former fact that may act as an influence contributing to a mental illness. Moreover, no single affective trend is in itself etiological. It is when it comes into conflict—either with other trends or with external reality—that a cause for mental illness exists. Accordingly it would be more accurate to discuss as causes of psychoses *only* extrinsic factors and instinct conflicts. By the systematic following of such a principle, I believe that a more uniform and comparable terminology for the etiology of mental illnesses could be developed, and that we would have a clearer envisagement of cause-and-effect relationships in psychiatry which would contribute both to the problems of therapy and to a more scientific comprehension of psychodynamics.



## A FOLLOW-UP STUDY OF PAROLES FROM CALIFORNIA STATE MENTAL HOSPITALS<sup>1</sup>

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The following report deals with a preliminary random sampling study of two years "follow-up" experiences with patients paroled from the California State Mental Hospitals during the six months period ending June 30, 1940. Paroled patients include those given permission to leave the hospital and constitute a selected group comprising the "better risks" of the hospital population. Their selection for parole during the period studied was in large measure "a trial and error method" and not intimately associated with a concerted effort to extend family care as a later organized extramural program. It does not attempt, therefore, to evaluate the differential successes of "home parole," "family care," or "industrial parole."

For purposes of comparison, the patients paroled were divided into two groups. The first included 364 mental patients comprising 210 women and 154 men.<sup>2</sup> This ratio of 42 men in each 100 paroles is in contrast with 55 men in each 100 persons admitted to the mental hospitals. Thus, more women are paroled in proportion to admissions than men. The second group included 126 alcoholic patients comprising 34 women and 92 men. This ratio of men and women paroled coincides with the proportion of women and men alcoholics admitted.

Of the 364 mental cases paroled 24.7 per cent were returned to the hospital within a year, and the same proportion continued in residence at the close of the study on December 31, 1942—a period of two years. By the end of the first year, 49 per cent were still on parole and carried on the books of the

institution, whereas 22 per cent had been discharged and 3.5 per cent had died. By the end of the second year, 19 per cent were still on parole whereas 50 per cent had been discharged and 6.5 per cent died by the close of 1942.

Of the 126 alcoholics paroled 1.6 per cent were returned to the hospital within a year, and the same proportion continued in residence at the close of the study. By the end of the first year 37 per cent of the alcoholics were still on parole; 60 per cent had been discharged; and .8 per cent had died. By the end of the second year, 1.6 per cent were still on parole; 93.5 per cent had been discharged; and 1.6 per cent had died.

These data indicate that the first year of parole is the more crucial period since approximately three out of every four mental patients paroled remain outside the hospital after the lapse of one year, and that these proportions do not materially change by the end of the second year. For the alcoholics approximately 98 out of 100 remain outside the hospital after the lapse of one year.

Reviewing these experiences from a somewhat different point of view, it is observed that approximately 75 per cent of all the mentally ill involved were paroled within 24 months of admission; 50 per cent within 12 months; and 25 per cent within 6 months. Thus the maximum chance of parole was during the first 24 months of illness, and the critical period for the application of intensive treatment and restoration to home and fireside was during the first 6 to 18 months after the onset of illness.

On the other hand, more than 90 per cent of the alcoholic cases involved were paroled within the 12 months following their admission and approximately 33 per cent within the first six months. The maximum chance of parole for this group was within the first 12 months after admission.

<sup>1</sup> Acknowledgment is due to Nathan Sloate, Supervisor of Extramural Care, Department of Institutions, for suggestions and advice on this study.

<sup>2</sup> Of the 364 mental cases paroled, more than half were disorders of a constitutional type, 35 per cent dementia præcox and 18 per cent manic depressive.

## AMPHETAMINE SULFATE IN ABORTING THE ACUTE ALCOHOLIC CYCLE<sup>1</sup>

MICHAEL M. MILLER

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Considerable attention has been directed by the medical profession toward the management of delirium tremens and other states resulting from prolonged excessive drinking, while little effort appears to have been made to control pathological drinking by aiding the patient, through appropriate medication to recover his faculties and voluntary control.

In attempting to secure the cooperation of chronic alcoholics in a program of treatment, a persistent refractory attitude is frequently encountered which becomes increasingly apparent as drinking continues, while those concerned with the patient's welfare must witness his self-destructive course.

Let us for a moment consider the factors involved. The addiction pattern resulting from alcoholism is typical insofar as the drinking bouts are usually followed by subsequent acute intoxication and a post-intoxication recovery period.

This is to be contrasted with morphine addiction where we find a less pronounced narcotic effect. The marked lesser degree of intoxication resulting from addiction doses of morphine does not usually necessitate a recovery interval; thus we observe the familiar regular daily intake of the morphinist. It is generally assumed that moderate amounts of alcohol depress the cortical centers with consequent release and predominance of subcortical activity, this "pseudo-stimulation" being what is sought by many alcoholics. Continued drinking, however, apparently leads to a depression of the lower centers followed by partial, or complete loss of consciousness, voluntary control and critical reason. The alcoholic awakens with a characteristic "hangover" featured by restlessness, fatigue, vomiting, tremor, headache, bewilderment, mental depression, anxiety and feelings of guilt and self-condemnation.

It is noteworthy that for a time after

periods of heavy drinking there exists some impairment of sensory perception, awareness, judgment and voluntary control; thus in certain activities such as aviation, this reduced awareness may have serious consequences. The patient usually seeks relief from this disagreeable state by further drinking.

It is during this "hangover period" associated with the aforementioned signs of self-condemnation, guilt and psychic depression that the patient is usually found most amenable to treatment. It is, therefore, the logical point at which to break the vicious cycle by substituting some non-harmful drug which will combat the existing "hangover effects," aid in inducing a sense of well-being, counteract depression and stimulate the higher centers of consciousness, thus paving the way for the initial phase of psychotherapy. Amphetamine appears to be such a drug.

Bloomberg(1, 2) reported that he found it possible to withdraw alcohol abruptly from most ambulatory patients with amphetamine.

Reifenstein and Davidoff(3, 4) observed that amphetamine considerably relieved the acute effects of alcohol and combated "hangover."

### METHODS

To test the effects of amphetamine, 30 individuals with suspended sentences, referred from the Cleveland Municipal Court, and 26 private patients were studied. All were non-psychotic, chronic alcoholics treated during the acute post-intoxication period.

The average duration of alcoholism was 16 years. The procedure consisted of amphetamine sulfate, 10 milligrams, administered orally twice daily, after breakfast and after lunch; luminal 1½ grains at bedtime; thiamin chloride, 30-40 milligrams daily. The patients were told to include large amounts of sugar in their diet. Tepid reclining baths were ordered mornings and evenings, and bedrest was recommended when

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

indicated. In 8 control patients placebos were substituted for amphetamine sulphate, otherwise, the treatment was identical.

### RESULTS

The acute drinking cycle was interrupted in 49 of the 56 patients, with subsequent periods of abstinence ranging from 1 to 18 months or longer. This interval was considered sufficient to permit physical recovery and the institution of a long-range restorative program. There was essentially no difference in the results obtained in the court cases as compared with the private ones.

Single doses of amphetamine produced marked analeptic effects in patients who were still semi-stuporous. Within 30 to 120 minutes they were partially or completely awakened, and there was a notable improvement in mood, physical well-being, critical reason and activity drive.

Patients who were not stuporous were usually relieved of the post-intoxication symptom complex, showing renewed interest in families and vocations. In most instances amphetamine produced varying degrees of euphoria, substituting optimism and increased self-assurance for the usual sense of guilt and inferiority. Patients stated voluntarily that they could concentrate better at any given task.

While under the effect of amphetamine, patients were more accessible, talkative, friendly, cooperative, and more receptive to psychotherapy and social readjustment. None of the control group treated with placebos exhibited the above effects and continued drinking.

### COMMENTS

No claims are made as to the lasting value of such a procedure. Moreover, it is to be emphasized that treatment aimed at physical, mental and social rehabilitation should include medical, psychotherapeutic and social measures(5). Therefore, it can only be stated that the amphetamine interrupted the acute drinking cycle in 49 of the 56 patients long enough to initiate a rehabilitative program.

The relief of "hangover symptoms" and the improved rapport aided in preparing the

way for successful psychotherapy, and social restoration. Of note in this regard is the recent statement of Rosenbaum and Lams (6): "The main value of amphetamine sulfate in the treatment of chronic alcoholism is that the free interval which the drug might produce can allow for the institution of a more fundamental psychotherapeutic régime."

Complications of a minor nature such as: oral dryness, restlessness, insomnia and excessive diaphoresis were encountered in about one-fourth of the subjects treated. In these instances amphetamine was reduced to 5 milligrams or discontinued when necessary. The drug was regarded as contraindicated in patients with confirmed myocardial or coronary disease. No harmful effects were observed following administration of amphetamine to patients with moderate hypertensive states. Patients with hypertension regularly showed improvement following abstinence from alcohol. The use of alcohol by such patients may be considered more harmful than the moderate doses of amphetamine required to help them overcome their alcoholism.

The importance of interrupting the destructive sequence of events in acute alcoholism cannot be over-stressed. It is significant that many of the patients who benefited by this procedure had refused treatment previously, but became more amenable to proposed treatment following the administration of amphetamine.

It is generally agreed that no treatment should be given to an alcoholic who manifests no sincere desire for a cure. In such cases a drug such as amphetamine would simply tend to counteract the effects of alcohol, and might accordingly even increase the amount of alcohol consumed. However, in cooperative patients it constitutes a valuable aid to psychotherapy, insofar as it markedly relieves the post-intoxication symptom complex; facilitates the withdrawal from alcohol; interrupts the vicious cycle, and improves the prospect of further abstinence.

### CONCLUSIONS

1. Fifty-six patients were treated with amphetamine sulfate during the early post-



intoxication period of the acute alcoholic cycle. The cycle was interrupted in 49 cases, with 7 patients failing to respond satisfactorily. The cycle was not interrupted in the control group treated with placebos.

2. It was found that physical and mental "hangover effects" were markedly reduced by amphetamine sulfate in doses of 10 milligrams.

3. A marked improvement in awareness, sensory perception and activity drive was observed soon after treatment.

4. Mood and rapport were improved, patients demonstrating greater cooperation, increased accessibility and decreased negativism, thus facilitating the initiation of a rehabilitative program.

#### DISCUSSION

THOS. A. RATLIFF, M. D. (Cincinnati, Ohio).—In Dr. Miller's paper on medication used to help the patient recover from chronic alcoholism, we have an important contribution. Amphetamine is not used alone but in combination with luminal and thiamine chloride. I want to point out the importance of the use of adjuncts with amphetamine. Some barbiturate in combination with amphetamine is distinctly advantageous.

The Alcoholics Anonymous treatment of chronic alcoholism has become important in this country because of its extent. Groups of this organization are working in all the large cities. While Dr. Tiebout emphasizes the importance of the religious experience in this treatment, there are other factors involved in its success. We have various religious organizations using the religious influence in treating these cases, such as the Salvation Army. Many of the groups of Alcoholics Anonymous are very careful in their selection of cases. There is the continuous work of the members with each other in having frequent meetings and carrying on intimate personal contacts when necessary. After presenting three typical cases, Dr. Tiebout states, "There is a growing recognition of certain common qualities which are regularly present in alcoholics, excepting those who have a frank underlying mental condition." I am sure we will find many more chronic alcoholics who do not conform in their personalities to those described, and who come under the exceptions; namely, a variety of abnormal mental states, which underlie the condition. Dr. Tiebout has presented an interesting analysis of the mechanisms involved in the patients who are undergoing this treatment. We are left, however, with a feeling of the incompleteness of the analysis. Many questions arise from this discussion, such as—What is the nature of the fundamental narcissism to which the writer refers? What levels in the psychosexual development do

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these cases regress to? What is the family constellation and what are the interpersonal relations in it, etc.?

The papers indicate the great need for further study of this most important subject, chronic alcoholism.

E. M. JELLINECK, M. D. (New Haven, Conn.).—Public interest in the rehabilitation of alcoholics is at present growing at a marked rate, as evidenced by proposals relating to this subject now pending before the legislatures of several states. This growing interest may be ascribed to the acute realization that all potentially useful human material in the war effort must be salvaged. It is important that while such a public tendency is developing, reinforcement should be coming forth from psychiatric research into the possibilities of the treatment of alcoholics. It is gratifying, therefore, to see that such psychiatric researches are reported at this symposium.

In his paper "Amphetamine Sulfate in Aborting the Acute Alcoholic Cycle," Dr. Miller concentrates on one phase of the treatment only; but this one phase is a crucial one. The hangover phase represents a stage at which, although with great difficulty still, the alcoholic patient is nevertheless much more accessible to the initiation of a therapeutic interference than at any other stage of his alcoholic career. Dr. Miller thus does not overstress the importance of any measure which may tend to overcome the discomfort of the hangover period without recourse to alcohol and which will make the patient more accessible to the therapist. If this can be achieved through the use of amphetamine sulfate without detriment to the patient, then this drug should receive serious attention. On the other hand, the utmost precaution must be taken in order not to give the impression that benzedrine is a cure for alcohol addiction. Dr. Miller has fully recognized

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that this is not the case, and has expressed this opinion quite adequately. Nevertheless, one may predict that not alone the lay press but even all too great a percentage of professional men will draw a wrong conclusion; and that, in due course, in debates relating to this subject the discussion will not center around the question whether or not benzedrine is a useful adjuvant in the therapy of alcoholics but rather around the question whether or not benzedrine "cures alcoholism." The future usefulness of this drug in the initial stages of the treatment of alcoholism will depend largely on the success in delimiting the rôle which it plays in the entire treatment.

The experience described in Dr. Miller's paper does not extend over any long range sufficient to evaluate the success of therapy, and I anticipate that this point will inevitably be raised. I wish to say, however, that the criterion for the usefulness of benzedrine in the initial stage of treatment is not the ultimate outcome of the entire therapeutic procedure, but the criterion is rather the patient's accessibility in the hangover stage when benzedrine is used and when it is not used. Dr. Miller has approximated the answer by the use of a placebo in a number of his patients. The answer is an approximation only, since the patient samples were rather small. The indications, however, are definitely in favor of Dr. Miller's assumptions.

It is a pleasure to note that Dr. Wall is continuing his valuable contributions to the understanding of the treatment of alcoholics. It is of particular interest that the material presented by Drs. Wall and Allen, in their paper "Results of Hospital Treatment of Alcoholics," pertains to other types than those usually presented in reports from state hospitals, and that 81 per cent of them were not psychotic. The predominant use of the much more accessible state hospital material has yielded a somewhat distorted picture of the alcoholic patient. It has been stated ever so often that alcoholism is a characteristic of the low economic and educational strata. This has come about through exploring where only these strata can be found predominating. In the sample of Drs. Wall and Allen, 63 per cent were college graduates and practically all of them came from better than average homes. This in itself tends to widen the view on alcoholism. Also, the use of state hospital material, relating predominantly to psychotic patients, is hardly suitable for the evaluation of the treatment of alcoholism. Success or failure of the treatment of alcohol addiction must be divorced from the treatment of psychosis. Since, as mentioned before, the incidence of non-psychotic patients in the sample of Drs. Wall and Allen was 81 per cent, their statistics relating to therapeutic results are of greater validity than statistics relating to groups in which the incidence of psychosis was much larger. The value of the statistics presented in this paper, however, could have been enhanced by segregating in the tabulation the success in the patients without psychosis and in those with psychosis, instead of merging the results with those two groups into a heterogeneous sample. Since the results are reported 3 to 8 years

after the patients left the hospital, the statistics on recoveries may be regarded as significant. It is somewhat difficult to evaluate therapeutic results when these are not correlated with characteristics of the patients. The value of reports such as this would be greatly enhanced by an analysis of those elements which may be related to success and those which may be related to failure.

The section of this paper relating to the treatment itself does not reveal too much about the nature of the therapeutic procedures. This, however, lies in the difficulty of verbalizing such an individualized and elusive art as psychotherapy. I wonder, nevertheless, whether it would not be possible to convey more of these processes, not in the frame of a formal description but rather in the frame of individual case histories. Drs. Wall and Allen have given here 3 highly interesting case histories in which they have displayed their great ability to sketch the essentials of the patients' development up to entering the hospital, and they might have succeeded equally well in reflecting the therapy by describing the changes which the patients underwent during the period of their hospitalization.

Dr. Pescor's paper, "A Comparative Statistical Study of Male and Female Drug Addicts," deals with a challenging problem in all addictions, namely, the sex differential. That this sex differential is not biologically determined but is largely to be looked for in social mores, is particularly indicated by the statistics of alcoholism. The fact that in Sweden the ratio of male to female alcoholics is 23 to 1, in Germany 12 to 1, and in the United States 6 to 1, is the strongest indication that the reasons must be looked for in social attitudes. It is surprising that this problem has not aroused more interest among psychiatrists and sociologists. Dr. Pescor's investigation must therefore be welcomed. While it is of importance that Dr. Pescor's findings indicate that the female drug addict is liable to come from much smaller towns or cities than the male addict, and that she is more liable to become addicted through the experience of the relief of bodily pain, and that, in contrast to the male addict, she is less liable to have an antisocial record, it seems that the author has overvalued the implications of statistical methodology. It is one thing to state that the occurrence of a given trait occurs with statistical significance more frequently in one group than in another, and it is another thing to try to characterize the two groups by these differences without stating the magnitude of the differences. That we are assured that the differences between the male and female groups are statistically significant is in itself insufficient to guarantee that we are dealing with essential characteristics. If, for instance, in a group of 100 male and 100 female drug addicts it should turn out that only 20 per cent of the males but 40 per cent of the females come from cities of 50,000 inhabitants or less, this would represent a statistically significant difference, but it would not constitute an essentially differentiating characteristic. It would only indicate a tendency, but not a necessary condition. Such tendencies are naturally of great interest, but students of this

question should be given, through the medium of quantitative statements, the opportunity to judge the strength and importance of such tendencies. Dr. Pescor's study would gain in weight by giving the actual figures instead of merging the statistics into a narrative which surely has more charm than a statistical table but, on the other hand, involves interpretation going beyond the limits of statistical implication. All these remarks are made with the assumption that the sampling is random. But it is

quite possible that such an institution as the one at Lexington, when suddenly opened for female patients, would attract a certain type of female addict, and that therefore the sampling would become biased instead of random. It should be of interest to follow the trends over the coming years at the Lexington Hospital, and studies such as Dr. Pescor's should be fostered, even though they require some reorientation in relation to statistical interpretation.

## SCHIZOPHRENIA IN A FOUR YEAR OLD BOY<sup>1</sup>

H. ROBERT BLANK, M.D.,<sup>2</sup> OLIVE CUSHING SMITH, M.D.,<sup>3</sup> AND  
HILDE BRUCH, M.D.

Schizophrenia in childhood is unusual and in children under six years of age is rare. This case is presented not only for its rarity, but also because of the family inter-relationships and their bearing on the development of the child's psychosis. Tommy, a 4½ year old only child, was referred to the Harriet Lane Psychiatric Clinic of Johns Hopkins Hospital. After preliminary examination the child was placed in the Child Study Center of Maryland for more prolonged study and treatment by one of us (H. R. B.) while the mother was seen at intervals (by O. C. S.) at the clinic.

### HISTORY

The history was obtained (O. C. S.) from the mother and was colored by her anxiety and tendency to interpret rather than report her observations. Mrs. T. maintained that Tommy underwent a change in behavior on moving to Baltimore two months previously, but discussion brought out that there had been a gradual change over an indefinite period. Tommy was born at full term, by instrumental delivery, but was healthy and weighed 7 pounds, 11 ounces. He was nursed 7 months without difficulty, but was then weaned because of biting at the breast. He said "mommie" and "daddy" at 9 months, and walked at 14 months. The mother's statement that Tommy was a bright child was upheld by a photograph at age two, which shows an intelligent, smiling face. He loved to be read to at the age of two and three and would repeat lines from stories and poetry. He talked a great deal and had a tendency to stutter at one time, but changed gradually to a rather withdrawn silence, lost interest in his toys, asked no more questions except to go to bed or to the bathroom, had temper tantrums and showed many fears. He said such things as "Don't do that—stop it—I'll kill you." On one occasion of some trouble with the toilet when his mother asked if he had put something in it, he cried, "Mommie, Mommie, Mommie, I didn't, I didn't." On another day when he accidentally defecated in the bathtub after a cathartic, he exclaimed, terrified, "flush it, flush it, flush it." What the mother called

clever sayings about air-raid shelters and bombs smattering you to pieces were obviously repetitions of things heard. Tommy had always slept in a separate bed in the parents' room but loved to get in bed with them. For a week before the first visit to the clinic, he screamed every night. The mother stated that he used to know his former address, but would not learn his present one, said he had no name and if asked his age said "fifty years old." There seemed to have been little normal contact with other children, as Mrs. T. was fearful of letting him run in the streets.

Mrs. T. brought with her a finger-painting done by Tommy and gave her interpretation of what he meant to express: mother and father walking toward a precipice, mother looking back and Tommy, lost, tumbling into space in the lower corner. In the rough daubs of red paint on a sheet of brown paper one could agree to such an interpretation as representing what the mother herself saw in the situation. It became obvious that the whole home atmosphere was full of fears and terrors, and that the mother was almost as sick as the child. Later contact with the father showed him to be an extremely neurotic, frustrated, even paranoid individual.

### FAMILY HISTORY

Family history showed much psychopathy. Father, 32, Austrian-Jewish by birth, came to the United States at about age six. He had a high school education, worked in a printing shop, was unemployed for a time, then went on W. P. A., and now is a government filing clerk. In an interview, Mr. T. tried to present an intellectual insight into his own difficulties, but his attitude was that of a spoiled, sullen, contentious child. He told of an unhappy and frustrated childhood upset by difficulties between his parents, who were eventually separated. He wanted to do creative writing, but never had the opportunity. He had aspirations about starting a community of cooperative living, but receded from social contacts. He would never get a raise in his job, others with more influence were getting ahead of him. He knew he was "inadequate" but even suicide would be no solution because his wife could not support the child. All attempts to bring Mr. T. down to factual considerations of the current situation were eluded. He felt there was nothing more the matter with his child than was the matter with himself in childhood and there was no use doing anything about it.

Mother, 38, Polish-Jewish by birth, was brought to this country by her family at age two. They lived in a small town where the father worked in a factory owned by his wife's brother and they had the position of poor relations, living on the richer

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

<sup>2</sup> From the Child Study Center of Maryland and The Baltimore Mental Hygiene Clinic.

<sup>3</sup> From the Harriet Lane Psychiatric Clinic, The Johns Hopkins Hospital.

relatives' property. The father, a rabbi, was a quiet type, the mother was aggressive and domineering. Mrs. T. said she herself was awkward and backward as a child in kindergarten, but later made up lost time and graduated from high school and normal school. Her mother made her go into teaching, which she did not want to do, because she wanted more education herself but the financial help was needed. She taught in nursery school until about 26, then took a job as saleslady, which work she also disliked, and finally married at age 31. As her husband was not making much at the time, she again went into teaching, but she gave this up later in order to let her husband get a W. P. A. job, since he was then out of work and she thought it better for his morale to be the provider. Tommy was born four years after their marriage; there was no other pregnancy.

There was much psychotic history among the maternal relations. One sister died at 15 as the result of refusing to eat or drink after witnessing an accident. Another sister had a period of depression and hospitalization when young and at the age of 50 had been in a state hospital for 10 years. The child of one brother died of dementia praecox. The son of another was "withdrawn and quiet." Other maternal siblings and their children appeared to be normal, some of them possibly above average in intellectual and professional attainment.

#### PRELIMINARY EXAMINATION AT THE HARRIET LANE PSYCHIATRIC CLINIC

Tommy was seen on three occasions (by H. B.) at the clinic. During the first two interviews he seemed mostly aloof, preoccupied and self-absorbed. A few times he seemed to be in contact and showed a bright meaningful smile. He talked very little, at times mumbled to himself. He was more responsive at the second visit. His play consisted mainly of moving a toy tank back and forth, sending it over to the examiner once and responding with a smile when it was sent back. He related his play more directly to the examiner at the second visit, taking blocks from her hand to build a tower. He showed signs of attachment and at one time played with the physician's thumb, moving it back and forth, and saying, "I love you," bent down and stroked her shoe.

He was more outgoing at the third visit after having shown marked improvement in his behavior at home. He looked more alert and smiled freely when spoken to. His play was more varied and meaningful. When the window shade was pulled, he called it "night," and became very affectionate, clinging closely to the physician and mumbling words of endearment. After some time he wanted it to be "morning," shouting "six o'clock" and "seven o'clock," and becoming aggressive, shrieking and screaming. These two episodes were repeated. Another type of play dealt with feeding, trying to force a toy animal and clay into the mouth of the examiner or pretending to eat it himself without actually doing so. Clay on a plate was called "cereal" and he pretended drinking from a cup.

In many ways the activities were like those of any young child who "pretends," but there was more urgency and the laughter became more and more shrieking and excited. As soon as the play period was terminated, his facial expression became detached and self-absorbed. He did not want to leave the clinic but followed when taken by the hand and said "bye-bye" with a smile.

#### COURSE IN THE CHILD STUDY CENTER

Tommy spent 9 months at the child study center (under care of H. R. B.). The first contact with the child was on admission, as his mother brought him in, and the resemblance between his behavior and his mother's was striking. Both were withdrawn, apathetic, slow moving. They came into the office and Tommy seeing a few toys on the table touched them very gingerly, keeping head averted, but showed no apprehension or other expression of feeling. He left the office with a nurse and his mother and took the separation from his mother extremely passively, looking up at her with a dazed, wondering expression.

For his interview three days later, we saw him in the playroom. He was alone in the corner, whereas the other children were playing in groups. He was putting pegs into holes on a board. He went along with us in his typically passive, distant manner. After being with him for several minutes, one realized that his basic mood was one of marked preoccupation and apathy, on which other feeling tones were intermittently and briefly superimposed.

The table was covered with toys of all sorts, yet most of the time he sat staring vacantly first at the toys, then at the psychiatrist, then at the window, then back at the toys. His most frequent reply to questions was repetition of the question; that is, a definite echolalia. His second most frequent reply was a peculiar "yes," sounding more like "yaahs." This was accompanied by a grimacing, stiff smile, which was suddenly terminated by relaxation of the facial musculature, and resumption of the more typical apathetic expression. He also mumbled a great deal unintelligibly to himself.

When encouraged to play, he slowly extended his hand, gently fingered a toy and then froze in this position, stared at the toy for a while, then stared slowly about the room. At one point, when he was given a bed to play with and it almost fell off the table, he very quickly and with perfect coordination caught the bed.

He was told two dolls were mother and father. He slowly fingered them. The mother happened to fall down and his face broke into a genuine smile, which lasted about two seconds before he froze up again. It seemed as though he became conscious of his smiling and could not tolerate it.

On being offered a big rubber dagger he took it, tapped the father-figure on the head, and then ran it over the throat of the little boy doll, accompanying this with a grimace. He then stopped, holding the dagger hilt on the table, and stared at it. We said nothing for several minutes. Then we began asking him questions and at the first word, "Are,"

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Tommy was startled and jumped into a defensive position, the dagger grasped and ready for action, but he immediately relaxed back into his self-absorbed state. This was the only manifestation of frank fear. His most frequent seemingly hostile expression was a grimace in which he exposed his teeth. This usually accompanied his "Yaahs." When asked whether he liked us, he replied, "I like you"; but face seemed to spell, I hate you. The tendency to stereotypy in speech and movement was striking.

Interviews were held almost daily for several weeks, the frequency gradually being reduced to one every two weeks. However, the therapist continued almost daily contact with the child in the nursery and in other group situations. Only transitional contact could be established with Tommy; the child at best did not converse beyond making two consecutive relevant and coherent replies to questions. His behavior during interviews was essentially the same as in the first interview. Sometimes he was more preoccupied, inactive and uncommunicative; sometimes more spontaneous in movement, speech and expression of feelings. Panic-like episodes were observed not infrequently. For example, he once engaged in a slow, touching type of play with the dolls. Suddenly he left the dolls apprehensively, ran over to the therapist, holding on to him for several minutes, grimacing all the time. Then he walked away, adopted a few studied postures with his head cocked to the side, and went back to the toys. The child expressed most anxiety, during the interviews, in relation to urinary and rectal urgency. This was a frequent occurrence during the early months of his treatment. One day in September, the physician was called to see Tommy, who for three-quarters of an hour had been pacing to and fro in the bathroom, anxiously attempting to suppress urination. He reiterated, "I don't want to pee pee." After being placed gently on the toilet seat, he voided. This relieved his anxiety completely, but he soon showed some concern about his wet pants.

When given a pencil and paper, Tommy scribbled obsessively, usually accompanying this by an unintelligible commentary, obviously related to his drawing. Once when he got through with his scribbling, he rushed into the therapist's arms and began talking to him as though telling a story. Aside from the words and phrases "Once upon a time," "a long time," "maiden" and something like "they lived happily ever after," all of which were heard distinctly, the story was unintelligible. During this performance he reiterated a phrase as much as fifteen times, gradually increasing his tempo and volume to a crescendo. He did this for example, with the words "Yesterday, doctor."

Frequently there would be a chanting type of song with a jargon or simple repetition of one word, like "Tommy, Tommy, Tommy." Once the therapist said, "Tommy is a good boy." He repeated this intermittently throughout the interview, several times interrupting his play to run over to the telephone and say into it "Tommy is a good boy."

In the latter months of treatment, Tommy di-

rected his play more frequently toward the therapist and his possessions, but this was not a striking nor a consistent tendency. The child remained moderately attached to the therapist on a passive level. Only once did Tommy show fear of leaving the office to join the group outside.

#### SUMMARY OF BEHAVIOR IN THE GROUP

In group situations, Tommy was essentially passive, dependent and seclusive. He obeyed other children and adults mechanically most of the time, with striking absence of spontaneity and playfulness, although he enjoyed imitating the mischievous behavior of other children. His episodes of active negativism were brief and far less characteristic than his passivity. For example, he would occasionally refuse to eat anything except dessert, but when the dessert was withheld, he immediately ate properly. This testing type of behavior should be differentiated from the "catatonic" holding of food in his mouth which was noted during the early weeks of treatment. The child was no major feeding problem.

In the nursery school, Tommy required constant stimulation and encouragement, else he would sit still doing nothing more than play with his thumbs and smile occasionally when something struck his fancy. He was least inhibited and least seclusive in the dormitory where he was under the care of his housemother, who had more contact with Tommy than any other adult and to whom he was most attached. Even the housemother, however, couldn't succeed in conversing with Tommy. Yet Tommy made his wants known clearly enough: "I want to wet," "I want to have a bowel movement," etc.

Tommy was possessive but not very acquisitive. If another child took one of his toys, Tommy would tear it away, strike the child or run crying to the teacher. Occasionally, hostility aroused in this manner would be followed by several hours of undifferentiated negativism during which he would refuse to comply with routine. Tommy never struck another child without some provocation. He became definitely attached to the group and on several occasions indicated a preference for the other children rather than his mother when she visited.

During the first 4 months, Tommy frequently soiled and wet the bed as soon as he lay down, refusing to void normally. This behavior tended to follow changes in nursery or dormitory personnel, but one could not always establish such a connection. Bladder and bowel difficulties were no longer present after the fourth month.

Tommy was most disturbing at night. When put to bed, he would usually remain awake for one-half to several hours, phonographically repeating things he had heard during the day and in the past, singing, laughing and babbling in Yiddish and English. Most of this production was unintelligible. During the first few weeks there was frequent crying at night and frequently there were night terrors, but this behavior cleared up almost completely by the time of discharge.

Tommy could dress himself, but preferred to have

his housemother do the entire job. Usually a good compromise was effected.

At discharge, the staff agreed that Tommy had made a happy adjustment on a very simple level, had lost most of his manifest fear and anxiety and was more active. He remained, however, essentially a withdrawn, blocked and passive personality.

#### MEDICAL AND NEUROLOGICAL

Tommy was a healthy, well-developed child, tending toward the pyknic rather than asthenic habitus. The muscles were flabby and tendon reflexes hypoaactive, but his flabbiness diminished as his activity increased. He gained one inch in height and two pounds in weight during the nine months. No positive neurological signs were elicited.

The *electro-encephalogram* was normal. (Courtesy of Dr. Ruth W. Lidz and the Henry Phipps Psychiatric Clinic of Johns Hopkins Hospital.)

*Benzedrine Treatment.*—Benzedrine sulfate aggravated the child's symptoms. He became more restless, agitated, irritable and apprehensive, tore at his fingertips and remained awake most of the night. Removal of the drug was followed by marked improvement. The maximal dosage was 20 mg. daily. Doses under 15 mg. daily were without clinical effect.

#### COURSE OF THE MOTHER WITH THE HELP OF INTERVIEWS AT ONE OR TWO WEEK INTERVALS

Shortly after Tommy's admission, the mother and father on a visit to the Study Center became upset about the institution and the treatment. Mrs. T. was disappointed because the study center did not present the idyllic perfection she had pictured. Mr. T. was devoid of understanding and at odds with everything and everybody, particularly his wife, on the subject of the boy being in such an institution at all. He wanted to take Tommy home. On request the two came for interviews (with O. C. S.) at the Harriet Lane Psychiatric Clinic.

Mr. T. was full of resentment, but had no considered opinion. He merely reiterated that the place for a child was in his home. As to his wife, he was sure she could not get a job, as proposed, or if she did, could not keep one, and his tone and attitude suggested an underlying wish to see his wife fail. In fact, he even said maybe his attitude could be taken as jealousy. No real agreement could be obtained from Mr. T., but he finally subsided into fatalistic acquiescence.

In contrast to Mr. T., his wife responded well to sympathetic discussion. She comprehended that the stress and strain of their home and the father-mother disagreement and turmoil were the worst things for the boy—were in fact the environment in which he became sick. She told the writer that Mr. T. considered her not up to his calibre intellectually and felt a different kind of woman would have given him inspiration to write. She had told him to get another woman or leave her for a while and then see if he wanted her back, but nothing had

come of it. Sexual relations were not well adjusted, she was afraid of another pregnancy, yet contraceptive measures were not satisfying. She showed relief at the suggestion of regular interviews to discuss her difficulties.

Mrs. T. was encouraged in her wish to get a job and went about the matter in a very practical way. She found a night course of training for "Inspectors" in a war factory and got a Saturday job of selling in a department store. Eventually she passed the training course but unfortunately was not engaged by the factory. This was a great disappointment, but Mrs. T. took it without undue disturbance. The question of her non-acceptance was discussed and the personal matter of a rather heavy facial hypertrichosis was brought up, since this might play a part in the kind of job she could obtain. Her husband, incidentally, used the disfigurement as a means of disparagement. Arrangements were made for electrolytic treatments to begin when Mrs. T. should have the money to undertake them.

Six weeks later, after an interval of the physician's vacation, Mrs. T. presented a beaming appearance. She had already started the electrolytic treatments, had been doing successful part-time saleslady work, had bought some needed clothes and appeared to be in good condition. She now had in mind a job as agent for selling a publication on child training and was preparing to take the required instruction in salesmanship. Her husband was again disparaging, but she nevertheless put her plan into action and in the course of a few weeks was making her first sales. She felt she was learning much that would help her in handling Tommy, and the contacts with people she visited and the sales she made were building up her self-esteem.

In regard to her husband, Mrs. T. was taking a firmer stand. She stopped his going to see Tommy since this was only a disturbance to everyone, and told him that for herself "she would never step down again, no indeed, he knows that." She maintained that Mr. T. was changing for the better. How much this was wishful thinking could not be determined, but it was apparent that Mrs. T. had need of this husband, even if he was a difficult and petulant child.

Early in February, 1943, Mrs. T. announced that she was looking for another place to live. She had been planning to change their home before bringing Tommy back and the end of his nine months' stay at the study center was approaching. She found an apartment in a nice suburban area where Tommy would have space to play, Mr. T. would take care of the grounds and make a garden, which he liked to do, and Tommy would attend a nursery school nearby. The expense would be heavy, but Mrs. T. planned to pay the rent with income from her sales of the books.

Unfortunately, this apparently well-thought out plan was built on too many uncertainties, for Mrs. T. was shutting her eyes to the fact that Tommy was not well and was planning as if he were a normal child. She made the move and encountered difficulties with her landlady. She felt cheated by the woman and harassed by her husband, but these

disturbances did not seem sufficient to account for the acute anxiety which Mrs. T. developed. Up to this time, she had been in essential agreement with Tommy's stay at the study center, but now she seemed to be in a panic to bring him home. Persuasion to leave Tommy two months longer at the study center while she became more secure financially was unavailing. The suggestion that he might not be accepted at the neighborhood nursery school among normal children aroused frantic anxiety. She finally agreed to wait 10 days, but was unable to face more than this.

It is not known to what extent Mr. T. was the immediate cause of this acute anxiety, but it is probable that he was in some way back of it. One must consider also, however, that this mother had based all her apparently practical planning on the nebulous goal of Tommy's complete recovery, and was refusing to recognize anything short of her desire. She would make it so by sheer force of insistence. It became evident that a crisis had developed and the rational structure was shaken to its foundations.

Tommy returned, was admitted to the neighborhood nursery school and was almost immediately dropped from the normal group of children. A special afternoon class was tried but this also was a failure. At home Tommy was a problem to his mother, refusing to do things if not so inclined. Mrs. T. had failed in her sales the week before his return and was told by her supervisor that she showed panic in her efforts to conclude a sale. The one apparently hopeful item was that Mr. T. enjoyed working in the garden in his off time and seemed to be happier, and this fact made for a better atmosphere. Since Mr. T. had given up a supplementary printing job, however, and Mrs. T. had made few recent sales, the financial situation was precarious and the outcome at this point seemed highly dubious.

The great difficulty lay in getting Mrs. T. to recognize the fact that she could not force society to accept her child on her terms; that, on the contrary, she had to accept what facilities existed. Since she herself could not go on with a gainful occupation without some outside care of Tommy, she reluctantly accepted his placement in a small private day school for mentally retarded children under the care of a very good worker, and it was hoped that Tommy would improve in an atmosphere of acceptance without pushing. Mrs. T. reported that at home his rapport with her was better and that she allowed him as much freedom as was compatible with life in the community. She herself subsequently regained her equilibrium and is now carrying on her sales again with success.

#### DISCUSSION

Certain aspects of this family situation are of interest, in particular the mother's capacity to build up a rational procedure and maintain it over a period of months on a fundamentally unstable foundation. A crisis developed, the immediate nature and cause

of which were unknown, but which resulted in a temporary state of panic and inability to act rationally. She has obviously been a very sick person, probably from early life, choosing a neurotic and unstable husband on whom she is nevertheless emotionally dependent, centering her whole being on her child, over-protecting him, over-stressing details of training, living in terror of the shadow of psychotic inheritance. She herself has the capacity to act on suggestion but any attempt to go deeper into fundamental difficulties is eluded. Supportive therapy was all that could be undertaken under the circumstances.

The personality disorder in the boy is characterized by a profound withdrawal of interest from the environment and severe disturbances in speech, motility and affect, without disease of the central nervous system and without primary mental deficiency. The clinical picture meets the criteria of Bradley and Bowen(1), Potter(2), and Despert(3) for the diagnosis of childhood schizophrenia.

Bradley in his thorough review(4) states that the cause of schizophrenia remains unknown. Many workers place major emphasis on heredity and constitution, although relatively little study has been given psychogenic factors, particularly the interpersonal relationships in infancy.

In our case, we feel more secure in discussing the interpersonal relationships than the child's unfavorable heredity. Tommy was subjected to severe emotional disturbance and limitation of socializing experience in a home atmosphere full of tension and threat. The parents were deeply involved with their individual frustrations and interpersonal strife. The father was frankly rejecting of the child. The mother was constantly protecting the child against catastrophe while entertaining fantasies for some glorious future. She seemed unable to approach the child without anxiety, incapable of giving him quiet affection. The child's symptoms might be regarded as defensive stratagems giving him protection from a threatening world.

Despert's(5) observations on early signs in childhood schizophrenia are most pertinent to Tommy. The existence of "dissocia-



tive phenomena" in language and general behavior, the "lack or inadequacy of socio-affective rapport," and pathological compulsiveness are held to be the most significant prognostic signs. There is frequently a dissociation "between language as a sign and language as a function" in the development of schizophrenic children. Phonographic memory and exceptional ability to quote nursery rhymes are prominent in the histories of these children. Words are used, however, for the sake of words, not for communication or the direct expression of thoughts and feelings. Despert considers compulsiveness pathological in childhood when the repetitive behavior lacks feeling and playfulness. In short, lack of spontaneous interest in the environment and the lack of playfulness are highly characteristic of the child who later develops more frankly psychotic symptoms.

In Tommy's case we were often impressed with what appeared to be the child's fear of expressing positive feeling. Fromm-Reichmann(6) stresses this feature in the psychopathology of adult stereotypes: "Schizophrenic stereotypes seem frequently to cover up friendly feelings which call for a favorable response. They are a means of defense against non-acceptance and rebuff." The schizophrenic is conditioned and sensitized by traumatic rebuffs in early infancy so that later interpersonal relationships tend to elicit defensive reactions. One of Fromm-Reichmann's patients told her: "We run away from fear of another rebuff, this is the clue to each and every one of our reactions."

Most workers are pessimistic concerning prognosis in childhood schizophrenia(4).

The prognosis in cases similar to Tommy, reported by Potter and Klein(7), and Lurie and co-workers(8) was uniformly poor. Kanner(9), presenting the results of Sante de Sanctis' experiences with his cases of "dementia præcocissima" most of which we would probably classify as schizophrenia, states: "... marked intellectual deterioration was the outcome in most instances, though in single cases a fair adjustment under relatively simple life situations could be arranged."

In our patient we cannot anticipate more than this simple type of adjustment.

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## A STUDY OF PRODROMAL FACTORS IN MENTAL ILLNESS WITH SPECIAL REFERENCE TO SCHIZOPHRENIA<sup>1</sup>

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The importance of developmental factors in evaluating dynamics as well as diagnosis and prognosis in mental illness has been specifically emphasized by Adolf Meyer. Today we know that it is not merely symptoms that are important in psychiatry (they overlap from one psychosis type to the next) but an understanding of the individual as a whole, including the environment in which he reacts, *i. e.*, the "psychobiological" concept. However, as far as the authors have been able to find, after a careful analysis of the literature, there has been no previous systematized attempt to check back on individual cases, now psychotic, to find studies (psychiatric or psychological), that would give a more or less objective description of this psychotic adult as a child.

For this study, the names, together with other identifying data, for 326 patients admitted to Cook County Psychopathic and for 108 Elgin State Hospital patients (under twenty-five years of age and from Chicago) were checked with the records of the Child Study Bureau of the Chicago Board of Education. Records for 86<sup>3</sup> (19.7 per cent) of

these patients, as children of school age, were found in the C. S. B. files. However since the very early records (previous to 1920) did not have information on all the variables we wished to cover in this study, only 59 of these 86 cases could be used. In addition a total sampling of 200 cases tested during the same years as for our patient group were picked at random from the C. S. B. files to constitute a control group.

A preliminary report made on some, but not all, of this material was worked up as a research project by a former psychology student at the Elgin State Hospital in partial satisfaction of requirements for a master's degree in psychology at Northwestern University.<sup>4</sup> For this report the patient group was studied as a whole and no significant differences were found on any of the variables between the subsequently psychotic group and a control group of 50 cases. Undoubtedly the extreme differences between the psychotic types tended to cancel each other out. The conclusions were that the subjects later developing psychoses (taking all the psychotic types together) could not be differentiated from the controls.

Table I classifies the data used in this study according to the reaction types into which the patients were classified from three to fifteen years *after* referral to the Child Study Bureau.

Approximately half (49.5 per cent) of the total patient group (unselected except on basis of age) are diagnosed as cases of schizophrenia with the affective psychoses the next largest group and then the feeble-minded, psychopathic and organic reaction types. Of the patient group for which we have adequate C. S. B. records, more than

<sup>1</sup> This study was made possible only through the encouragement and active cooperation of Dr. C. F. Read, Superintendent of the Elgin State Hospital; Dr. Francis F. Gerty, Superintendent of Cook County Psychopathic at the time this study was made; and Dr. Grace E. Munson, Director and Dr. Milton Saffir, Assistant Director of the Child Study Bureau, Chicago Board of Education.

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<sup>3</sup> Undoubtedly a number of the names checked included those of patients who had not lived in Chicago during their school years and those of patients who were educated in parochial or private schools rather than Chicago Public Schools. If it had been feasible to weed out these cases from the total group checked the percentage with records at the C. S. Bureau would probably be even higher.

<sup>4</sup> Results of psychological examination of children who were later institutionalized for mental disease. By James Birren, Northwestern University.

half are now (9.8 years later on the average) diagnosed as schizophrenic. Almost 19 per cent have been diagnosed as mental defectives (with or without psychosis or with periods of excitement). The remaining 28 per cent are now diagnosed as psychopathic personalities, chronic alcoholics, organic psychoses or psychoneuroses.

That a number of the cases, now diagnosed as feeble-minded, would, as children, have required special study is obvious and the relatively large percentage of cases mal-adjusted as children and now diagnosed as psychopathic personality would also be expected. The lack of ability of the feeble-minded and the behavior and disciplinary

age had been referred to C. S. B. The only other institutionalized patients that were not represented in the C. S. B. records were the 2 cases diagnosed somatic disease without psychosis and the 17 cases diagnosed as "without psychosis." This emphasizes the distinctive position of the affective reaction type, as the *only* group of patients at the present time psychotic, who were, as children in the public school system, all apparently making a satisfactory adjustment. This marked differentiation between childhood adjustment records for the schizophrenic and affective reaction types appears to support those theories stressing the importance of personality and early developmental his-

TABLE I  
CLASSIFICATION OF DATA ACCORDING TO PRESENT REACTION TYPE

| Reaction type               | Psychotic patients |          | Patients with records at C. S. B. |          | C. S. Bureau controls |          |
|-----------------------------|--------------------|----------|-----------------------------------|----------|-----------------------|----------|
|                             | No.                | Per cent | No.                               | Per cent | No.                   | Per cent |
| Dementia præcox .....       | 215                | 49.5     | 33                                | 53.1     | 2                     | 1        |
| Manic depressive .....      | 62                 | 14.3     | —                                 | —        | —                     | —        |
| Mental defective .....      | 40                 | 9.2      | 11                                | 18.8     | 3                     | 1.5      |
| Organic .....               | 45                 | 10.3     | 3                                 | 5.8      | 1                     | 0.5      |
| Psychopathic .....          | 20                 | 4.6      | 5                                 | 9.0      | —                     | —        |
| Alcoholic .....             | 22                 | 5.1      | 4                                 | 7.4      | —                     | —        |
| Psychoneurotic .....        | 11                 | 2.5      | 3                                 | 5.8      | —                     | —        |
| With somatic disease .....  | 2                  | 0.5      | —                                 | —        | —                     | —        |
| Without psychosis .....     | 17                 | 3.9      | —                                 | —        | —                     | —        |
| Not institutionalized ..... | —                  | —        | —                                 | —        | 194                   | 97       |
| Total .....                 | 434                | 99.9     | 59                                | 99.9     | 200                   | 100      |

problems of the psychopaths would bring them to the attention of the school authorities and to the C. S. B. for study. However, in addition, 3 (27 per cent) of the 11 psychoneurotics, 4 or (18 per cent) of the alcoholics and 33 (15 per cent) of the schizophrenics had *also* been clinically studied when children in grade school. The fact that there were *any* of these now neurotic or schizophrenic cases with symptoms of mal-adjustment as children that differentiated them from the other school children, hence requiring clinical study, should prove to be of great importance as far as etiology and prognosis are concerned and may possibly prove of value for prophylaxis.

Although the affective psychoses make up the second largest diagnostic classification in the total group of patients checked, not a *single* one of these patients when of school

tory as of differential and etiological significance for the functional psychoses.

There are several explanations for the relatively large number of psychopaths as compared with the other psychotic groups that had warranted study as grade school children. The one frequently pointed out by school and child psychologists is that the behavior disturbance of the psychopath constitutes a very obvious disciplinary problem for the teacher while the personality mal-adjustment of the schizoid or neurotic child does not so frequently interfere with class room efficiency and hence tends to be overlooked. Consequently the fact that any of these neurotic and schizophrenic patients (institutionalized as adults and so diagnosed) were studied as children at the C. S. B. certainly speaks well for the effective functioning of the Bureau.

Of the control group, only 3 per cent have been admitted to Cook County Psychopathic as mentally ill and 2 of these 3 per cent were diagnosed as either organic psychoses or mental deficiency while only 1 per cent of this group had been institutionalized as "functionally" psychotic. These 2 cases (1 per cent) are both diagnosed as "dementia præcox" at the present time.

The stated "reason for referral" of the child to the Bureau was included as one of the variables for study, the reasons given being grouped under the four general headings, retardation, behavior, personality defect and physical defect. It was found that the great majority of cases in both patient and control group were referred for study because of "retardation." This classification includes referral for such stated reasons as "backwardness," "feeble-mindedness," "dullness and inability in specific school subjects," as well as for the specific reason, often given, of "retardation." For all the reaction types except the psychopathic personalities, psychoneurotics and organic cases the largest number of referrals was for this cause. The dementia præcox and chronic alcoholics were so referred in approximately 50 per cent of the cases while 99 per cent of the patients now diagnosed as mental defectives and 74 per cent of the controls were referred for this reason (retardation).

The relatively large number of patients now psychotic, referred for retardation probably reflects the attitude of the teacher, *i. e.*, the inability of the child in school is for them the important point rather than the cause of such inability.

The second reason for referral, *behavior*, includes such referrals as those for school mal-adjustment, fighting, inability to get along with other students, restlessness, lying, petty stealing, etc. The psychopaths and organic cases are the only groups that had more than half of the referrals for this reason.

The greatest number of referrals for personality defects was among children who are now diagnosed as psychopathic, psychoneurotic, alcoholic or schizophrenic. However these percentages are smaller, than, from our present vantage point of years later, we should expect. Probably many of the cases referred for retardation, with our present

knowledge, we would study as cases of personality mal-adjustment with the retardation as a secondary factor or even, in some cases, as an artifact.

Only 1 of the children, later to be institutionalized as mentally ill, has been referred to C. S. B. because of physical defect while 6 per cent of the control group had such a referral.

The percentage of cases, classified according to intelligence quotient levels (given at the Bureau) and sub-classified according to reaction type was also determined. The most significant finding here is the extremely wide range of I. Q. scores for the children later to be diagnosed as cases of dementia præcox.

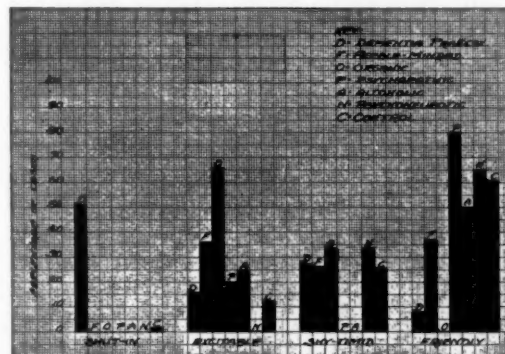


FIG. 1.—Reactions to C. S. B. test situations classified as to reaction type.

The range is from an I. Q. of 123 down to 63. The schizophrenic group differs from all the others studied because it, alone, includes cases of superior intelligence, and this despite the fact that approximately half of this group (including the majority of those found to have superior I. Q.'s) had been referred because of retardation or suspected mental deficiency. This stresses the need for a very careful differentiation between *apparent* and *true* inability in mental tasks for the pathologically schizoid child as well as the schizophrenic adult.

Fig. 1 presents (for the authors at least) the most significant and important findings in this study. These findings appear to us to offer objective verification of Adolf Meyer's concept of the shut-in personality type<sup>5</sup>

<sup>5</sup> Adolf Meyer seems to have been the first to describe this concept although the term "shut-in" was first used by Hoch as a name for this type of personality reaction.

as associated with schizophrenia or in Langfeldt's terminology "process" schizophrenia. This personality type describes the schizophrenic patient whose psychotic picture is merely an exaggeration of the withdrawn, seclusive, apathetic, asocial traits that have characterized him from earliest childhood on. With hallucinations and a delusional system added such a patient is ordinarily diagnosed as hebephrenic, or without these additions he is usually considered a simple dementia praecox.

The descriptions of test reactions given by the C. S. B. psychologists were copied verbatim and then classified and combined for the purposes of this paper into one of four descriptive levels. These descriptive levels are: (1) "shut-in," (2) excitable, (3) shy and timid, and (4) friendly, pleasant and cooperative.

More than 50 per cent of the schizophrenic patients when examined as children were described by the psychologist at that time in terms of a shut-in personality type. These were school rather than abnormal psychologists who may or may not have been acquainted with Meyer's concept of the shut-in personality and who obviously were not aware that on the average of nine years later these children were to be institutionalized as cases of schizophrenia. Some of the expressions used to describe the test reactions classified as *shut-in* are, "dreamy, listless, disinterested, abstracted, poor attention and concentration, over-sensitive, lacking in initiative, does not seem to try very hard, apathetic, withdrawn and slow but with good intelligence, indecisive and lethargic, rather hazy, applies self poorly and lacks interests." Not only were more than half of the schizophrenics described in these terms, as children, but of the 200 controls, 2 of the 4 children so described are now diagnosed as cases of dementia praecox. Not only this but none of the feeble-minded, organic, psychopathic, alcoholic or neurotic cases were described, as children, in terms of a shut-in personality type.

Most of the organic and 36 per cent of the feeble-minded were described in terms of the test reaction level labeled "excitable." These descriptive phrases included, such terms as, "restless, much nervous activity,

easily excited and inclined to be bold, curious and immature, high strung and nervous, over-talkative, nervous and jumpy, distractible, silly irrelevant chatter, lacks self control, hurried, attention flighty, lacks auto-criticism and responds excessively to praise, over-emotional, bursting into tears and a few minutes later laughing." It is rather surprising to the authors that none of the neurotic patients as children were so described but we have no explanation for this finding.

The "shy, timid" classification was used to include such test reactions as, "very babyish, immature in manner, submissive and dependent in reaction to examiner, shy, timid and lacking poise, speaks in barely audible whisper and clings to examiner as if badly frightened, constantly eyes door, appears apprehensive and asks if he can leave," etc. A fair percentage of both the controls and the experimental group (except psychopaths and alcoholics) were described in terms of shyness and timidity. This is perhaps the more or less characteristic reaction of many children in the psychological test situation, at least until rapport is established with the examiner.

The majority of psychopaths, neurotics, controls and alcoholics were classified as friendly, pleasant and cooperative in their reactions as children to the psychological test situation. Very few of the schizophrenic and none of the organic reaction types were so described. This type of reaction is characterized by such descriptive phrases as, "attentive and responsive, anxious to please, puts forth good effort, conscientious and earnest, grasps directions quickly, interested in tests and in his ability to do them, a good deal of self assurance, pleasant and friendly, nice mannered, attractive and appealing in her desire to cooperate with the examiner," etc.

#### DISCUSSION

These *retrograde* findings corroborate certain theories as to the nature and development of mental reaction types and also suggest some new possibilities. Meyer's hypothesis of the shut-in personality type as associated with schizophrenia (that is "process" schizophrenia), is corroborated, objec-



tively, by this study. Meyer's psychobiological concept stresses the importance of both constitutional and environmental factors, not as distinct and separate but as interacting agents. This concept can be used in distinguishing the two disparate types, schizophrenic and schizophreniform, usually grouped together as schizophrenia. Thus those cases in which the constitutional factors appear dominant and only slightly influenced by environment may be considered at one extreme. At the other extreme are those cases showing relatively benign constitutional factors but with a difficult environment, predisposing to conflict and mental stress (these we would consider to be the schizophreniform, schizophrenic reactions or, as Darrah uses the term, the schizophrenic cases as distinguished from dementia præcox cases).

The completeness with which the schizophrenics in this study fit the concept of "process" or "constitutional" schizophrenia and the absence of any schizophreniform cases bears out Langfeldt's hypothesis of these two extremes within the classification, dementia præcox or schizophrenia. Langfeldt was not the first one to formulate this hypothesis of course, but as the result of his carefully controlled and experimentally conducted piece of research he has encouraged much recent study and thought on this problem. More than twenty years ago Meyer<sup>6</sup> had expressed the same views when he stated, "among the conditions that are suggestively covered by the term schizophrenic reactions there are enough instances of recovery to make it desirable to avoid the term 'dementia præcox' suggested by the unfavorable course of a varying percentage of cases."

The results of this study also suggest the possibility of considering the schizophrenic (as distinguished from the schizophreniform case) as a constitutional reaction type, much as psychopathic personality and mental deficiency may be considered constitutional. This would explain our finding that a significant number of the schizophrenic patients were, even as grade school children, showing the schizoid traits that later in an exag-

gerated form were diagnosed as dementia præcox. This possibility would also fit in with the commonly observed phenomenon that siblings, sometimes even fraternal twins, who have to all outward appearances the same environmental factors may have strikingly different personality reactions. The influence and importance of environmental stresses alone may produce a schizophrenic reaction. However such cases according to the authors' point of view would be correctly diagnosed as schizophreniform psychosis. The true schizophrenic, on the other hand, from early childhood on shows the characteristically schizoid type of reaction sometimes even in the face of benign environmental factors, that develops into the regression characteristic of "process schizophrenia."

That there are marked individual differences among human beings in intelligence and character potentialities is generally recognized. Such differences in potentiality between individuals (considered constitutional because apparently inherent although capable of being influenced by environment) may also be found in the field of "personality."<sup>7</sup> This of course is merely a hypothesis and little if any work has been carried on to date to determine its validity. We might postulate however that certain individuals have limited and inferior potentialities for social and emotional adjustment. If environmental influences are also unfavorable the adequate social and emotional reaction patterns characteristic of the average individual are not achieved. These, then, would be the true schizophrenics who showed the same behavior patterns, that characterize them as psychotic adults, from early childhood on. One may, perhaps, profitably carry this analogy even further and postulate that individuals with potentialities for social and emotional reactions to an excessive degree (so far beyond the "average," on the normal probability curve, as to be pathological or "abnormal") make up the cases of affective psychoses. Fig. 2 shows a graphic representation of this hypothesis.

This hypothesis fits in with another point

<sup>6</sup> Meyer, Adolf. Constructive formulation of schizophrenia. *Am. J. Psychiat.*, 78: 335, 1921-22.

<sup>7</sup> The terms, intelligence, character and personality are used merely as class names given to groups of traits and *not* as specific entities or faculties.

stressed by this study, *i. e.*, that in true schizophrenia there is no specific onset (even insidious) of a disease entity but rather the progressive development of a type of personality reaction pattern.

We might draw an analogy between certain types of mental deficiency, psychopathic personality and process schizophrenia. They all appear to be constitutionally limited as far as development is concerned, in the fields of intelligence, social conformity and emotional and social adjustment respectively. We know that this is true of the mental de-

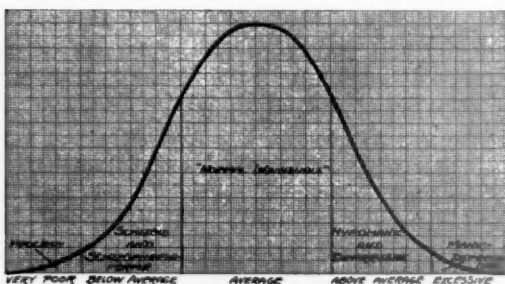


FIG. 2.—Emotional and social reaction patterns.

factive, *i. e.*, he does not have the inherent potentialities for intellectual development characteristic of the average individual. The same may be true of the schizophrenic, that is, in certain potentialities he deviates in a negative (and what we consider as pathological) direction from the average. These individual differences might be considered as constitutional, because, as in the case of the schizophrenics in this study, their reaction patterns, although they may be influenced by environment, do not appear to be primarily the product of environment. The influence of environment in schizophrenia is a debatable point. It is important certainly, and in schizophreniform cases it is probably the primary factor. Adolf Meyer points out that the individual and his reactions are the product of a given environment acting on a given

individual and the influence of each factor is changed and modified by the other. Hence, for some individuals with poorer than average potentialities in the fields of social and emotional behavior (*i. e.*, the social introvert, the shut-in personality type, etc.) even the best of environment does not appear to be good enough for adequate "normal" adjustment.

On the basis of this study then it appears that differentiation of several different reaction types within the broad concept of dementia præcox or schizophrenia should be made. The schizophrenic as a constitutional reaction pattern needs to be differentiated from the schizophreniform type, since the possibilities for prophylaxis and for treatment (of true schizophrenia at least) with our present armamentarium, are very limited if not altogether nil. Few reports of treatment results for schizophrenic cases as distinguished from schizophreniform have been made.<sup>8</sup> A notable exception however is the study by Gabriel Langfeldt.<sup>9</sup> Recent studies, with carefully equated control groups, appear to bear out Langfeldt's contention that percentage reports of shock therapy results merely indicate the relative proportion of schizophrenic versus schizophreniform cases treated.

We need not only to clarify and delimit our present diagnostic classification of schizophrenia but also to objectify our present prognostic and treatment concepts. If this is done, research in this field can be carried out on homogeneous groups rather than the heterogeneous jumble which now constitutes this classification type.

<sup>8</sup> Wittman, Phyllis. A scale for measuring prognosis in schizophrenic patients. *Elgin Papers*, Vol. IV, April 1941, p. 20.

<sup>9</sup> Langfeldt, Gabriel. Prognosis in schizophrenia and the factors influencing the course of the disease. *Acta Psychiatrica and Neurologica Supplementum*, 13, 1937.

## NEUROPSYCHIATRY IN A GENERAL HOSPITAL<sup>1</sup>

THOS. J. HELDT, M. D., DETROIT, MICH.

The Quaker attitude toward the insane, as seen in the "moral treatment" of the Tukes in England, and reflected in the efforts of Benjamin Franklin and his followers in America, was responsible in large measure for the hospital provisions made for the mentally ill in the early days of our country. Hurd asserts that when Benjamin Franklin wrote his petition to the General Assembly of Pennsylvania leading to the establishment of the Pennsylvania Hospital in 1751, he based his plea largely upon the need of providing accommodations for the insane. For years, the Pennsylvania Hospital provided for such patients in its building on Pine Street, and not until 1840 was the department for the insane established in West Philadelphia in a separate institution.

Russell records that on July 14, 1808, the "Lunatic Asylum" of the New York Hospital was opened to patients. More mercifully called "a medical asylum" by the governors of the hospital Dr. Russell judges that it would today be designated the psychopathic or psychiatric department of the general hospital. The opening of the "Lunatic Asylum" was a step forward in the care of the mentally ill as it was in the history of the New York Hospital. The New York Hospital was established in 1771. At that time there was no hospital in New York for the treatment of any form of illness, mental or otherwise. "Cells or wards" were provided for the mental patients in the "cellar part of the north wing" of this first New York hospital and "the first recorded mental case was admitted by resolution of the board of governors on September 18, 1792. The resolution stipulated that the patient should be admitted if he were 'considered by the physicians of the hospital as curable.' The records clearly show that the governors of the New York Hospital considered mental disorders to be

curable, and that their policies and plans in providing for their treatment were, from the beginning, governed by this view."

In 1818, Boston planned and was about to carry into effect similar provisions for the insane of Massachusetts, but when John McLean provided funds the step to a separate institution was immediately made.

In Detroit the Wayne County Poorhouse, predecessor of Eloise Hospital, and organized by a vote of the people March 8, 1832, was the guardian and foster parent to the poor, the halt and the insane. First official record of a mentally ill inmate was made when Bridget Hughes on her admission March 22, 1841, was registered as "crazy."

As Hurd remarked in 1915, permit me now to repeat: "I mention these little scraps of history to show that the care of the insane in the wards of general hospitals is no new thing."

### ADMINISTRATIVE ASPECTS

A very natural recurrent question throughout the years has been: Why was the original plan of caring for the insane in the general hospital given up? The answer is not far to seek. As in ancient days so in the early days of more recent times, the nature of insanity was only very imperfectly understood. Unorthodox and unacceptable behavior was its principal manifestation and excessive excitement its surest diagnostic sign. As soon as the patient became quiet and tractable he was regarded cured. Although he continued depressed and even harbored delusions hospital care was no longer considered necessary and he was returned to the care of his own people or some separate custodial provision was made. Such provision differed little, if any, from that granted the indigent poor, the friendless and the helpless. Segregation of the insane has been customary since the earliest days of antiquity. But it is the noise and the commotion of his disorderly behavior that has excluded him from the general hospital. This is to the obvious disadvantage of both the patient and

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

From the Division of Neuropsychiatry, Department of Medicine, Henry Ford Hospital, Detroit, Michigan.



the hospital, in that it sets the mentally ill apart too much from those afflicted with other ills. It places too much emphasis upon the legal aspects of insanity and constantly belittles the view that insanity is of the nature of disease and must be treated as promptly and as efficiently as other bodily disorders. Ninety per cent of all the nervously and mentally ill can be studied and treated in the general hospital without certification or commitment. Less than 40 per cent of the psychiatric patients properly treated in a general hospital need to be later transferred or admitted to state institutions on commitment.

The legal aspects of psychiatric disorder were originally much less prominent than now. In many states patients were admitted to institutions without legal formalities of any kind except a certificate of insanity by one or two physicians. The general public was at the time less aware and less discriminating regarding the custody and the care of the insane. About 1870, however, the public was aroused from its generally trusting, somewhat indifferent, "nothing-we-can-do-about-it" attitude to a state of fearsome apprehension and critical inquiry. This came about largely through the pernicious activity of an uncured insane woman. Soon many states enacted so-called liberty bills. These bills demanded that before any restraint could be placed upon the liberties of an insane person, a court and a decision as to insanity must be obtained. This led to many irregularities and delays in the care of patients. For many years in Illinois the victim of mental disease was charged with insanity, arrested, and taken into court. All the legal formalities of a trial were carried through before an impaneled jury, assigned attorneys for prosecution and for the defense; and the trial was ended only by the verdict of "guilty of insanity" or "not guilty of insanity." These and similar procedures hopelessly complicated the early treatment of insanity, making the diagnosis of a bodily disease a question of law and legally challenging the propriety of medical custody for the purpose of treatment. Suppose, for a moment, that all cases of contagious disease required legal evaluation before they could be isolated, quarantined and treated. Many a patient would become dangerously ill and would even die before such demands could be met.

Yet, at this very moment in this our enlightened present, it is easier, in the majority of instances, to admit an insane patient to a jail than to a general hospital. As formerly, affliction with mental disease still carries with it too much the implication that it is a disgrace and in a degree a crime. Hence, treatment is not sought until the layman on the street and those on the jury can make the diagnosis.

Another forward step was taken when effort centered on more expeditiously bringing about placement of the insane for observation. This led to the establishment of detention hospitals in our large cities. The detention wards of the Bellevue Hospital of New York City are a good example. For many years that hospital served as a place of custody with opportunity for determining the need of legal certification and commitment. This was the primary function of the detention hospitals. Treatment was very secondary and often omitted entirely. In 1915, Hurd remarked: "... detention hospitals have had a limited usefulness as places of treatment and cannot be considered true hospitals."

Further progress is seen in the establishment of the psychopathic hospital. The first of these in America was organized at Ann Arbor, Michigan, in 1903 in connection with the University Hospital. Other notable examples are the Henry Phipps Psychiatric Clinic at Baltimore, established in 1913 as a unit of the Johns Hopkins Hospital; and the Boston Psychopathic Hospital, founded in 1912 as a branch of the Boston State Hospital. The psychopathic hospital has been looked upon as a department of the general hospital for the study and care of acute mental conditions. As constituted, however, it has always been a unit built on a portion of the grounds separate and distinct from the other buildings of the general hospital.

Closer affiliation between the functions of the psychopathic hospital and the general hospital is seen in Pavilion F of the Albany (New York) Hospital. Pavilion F is connected by bridge and corridor to the general hospital building. Thus attached Pavilion F under the able management of Mosher and his successors has served as an example of how the care of the psychiatric patient can be facilitated. Since 1902 the mentally ill

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requiring removal from their homes have there received prompt treatment without the time-consuming formalities of legal procedure.

In an endeavor to bring about still closer relations between the psychiatric patient and the facilities of a general hospital, for the past 20 years at the Henry Ford Hospital in Detroit the aim has been a complete amalgamation of the services for the neuropsychiatric patient with those in general medicine and surgery. The neuropsychiatric patient should be a patient in favor, not in disfavor, and such is the goal of our effort.

To assure close association with all hospital departments and divisions of service it was deemed highly advantageous for the division of neuropsychiatry to be made a component part of the department of medicine. The Henry Ford Hospital, as most other general hospitals, is organized upon five basic departments: medicine, surgery, pediatrics, laboratories, and x-ray. The departments of medicine and surgery are subdivided into divisions: medicine into divisions of general medicine, cardio-respiratory diseases, gastrointestinal disorders, metabolic disturbances, dermatology and syphilology, and neuropsychiatry; surgery into divisions of general surgery, gynecology and obstetrics, ear, nose and throat, ophthalmology, orthopaedics, urology, and neuro-surgery. Thus it may be seen that the division of neuropsychiatry is an integral part in the central plan of the hospital, and as such must share constantly in all its activities. Very naturally there are some disadvantages in this arrangement, but they are far outweighed by the advantages. Outstanding among the latter is the intimate contact of professional confreres with the care and treatment of the mentally ill. They see, even in passing, that the neuropsychiatric patient does improve, recover, and is returned to his home and his work; that few rather than many are committed to custodial segregation. This integrated management also very wholesomely fosters the teaching of internes, nurses, attendants, the lay personnel, and even the visitor and the general public.

Most of the details of housing, lay and professional personnel, and outline of therapeutic facilities have been discussed in earlier presentations and need not be repeated here.

#### MILITARY CONSIDERATIONS

Hospitals have been called upon to make more changes since December 7, 1941 than have the rank and file of the general public. Through voluntary enlistment and Procurement and Assignment call, 112 physicians of an original staff of 165, together with 48 nurses and 33 lay personnel have entered the armed forces, from our general hospital of 475 beds. The depleted staff of physicians has been gradually rebuilt with internes and physicians in training to a present staff of 102. The general reduction in staff, however, carries with it a curtailing of service that is common to all hospitals. The loss of two psychiatrists, a neurologist and a psychologist has made the unaltered volume of work in the division of neuropsychiatry especially difficult.

Although very watchful of any change in the complaints and disorders of patients reporting to the division of neuropsychiatry since Pearl Harbor, we failed to detect any specific condition due to wartime stresses and strains until February 12, 1943, when a married man of 33 came to us in a reactive mental depression which was clearly traceable to his concern regarding his Draft Board status and his duty to home, family and country. During the past few months a few cases of similar nature have come to our attention, but in our personal experience the stresses and strains of war are reflected less in our patient clientele than we anticipated.

With the advent of Selective Service and membership on Medical Advisory Board, Wayne County Council of Defense, Michigan War Council, and a turn each week at the Detroit Induction Center, many of the problems incident to Selective Service have become a function of our neuropsychiatric work. On a Medical Advisory Board basis, the hospital as a whole has to date made 3511 including 304 neuropsychiatric examinations. The varied services mentioned are best disclosed through case reports.

G. V. J. was seen at the induction station during March. He is an unmarried man of 28, a Swede born in Finland, 6 feet 2 in height, 240 pounds in weight. He is a small-time farmer of upstate land. He reached only the eighth grade in school, and his general education is limited. His intelligence quotient is judged not to exceed 90. During examinations, he was well behaved, serious and emotional.

With tears streaming down his face, he declared—"I'm not going to kill anybody—when you go into the Army it means you have to kill somebody." On trying to learn the determinant underlying his lachrymation, it was found that he was really between Scylla and Charybdis in that he felt that he could not go into the Army nor could he return to his home environment, the latter because, "They said I had to go into the Army, and that I could not come back to the farm." "They" he explained were his neighbors. The neuropsychiatric findings were clearly those of a self-centered, inadequate personality of schizoid formulation and that to a prepsychotic extent. On inquiry, it was found that the senior medical officer of the induction center had received from this selectee's draft board a letter stating that it was board's opinion that the man should be inducted into the Army, and if he were not inducted, it was feared that physical violence would be done him. An appropriate decision was not hard to make. When asked what he personally would choose to do, he answered "I'd like to go and raise things on my farm, and be let alone." Obviously, he was a misfit for the Army, the Navy, or any other branch of the armed forces; but he was not a misfit for the farm, in fact, he seemed a part of it, and reflected it in his thinking and in his actions.

J. H., a married man of 26, with wife and two children, highly ambitious and patriotic, enlisted in the Army Air Corps with a keen interest and determination to become an air navigator. He was granted training to that end. He made rapid strides, and was promoted in rank. Then came the sudden and urgent army request for 300 bombardiers. He was ordered to become one of those 300. He demurred, he declined, declaring "I can't be a bombardier—all my training is for being a navigator." When he was too vehement in his protestations he was demoted. Three days later, he was a psychiatric casualty of grave type. For the past three months he has been in an army hospital as a fullblown case of dementia praecox. Unfortunately all men do not have the capacity to adapt to the inflexibility of army orders.

E. L., a 20-year-old lad is an only child and at that a problem child. He has been known to us since the age of 6. He was last seen at the age of 19 in December of 1941 when his wayward habits were about to bring him into conflict with the law. Considerable industrial interest was developed at that time and favorable employment was arranged. In January, 1943, the patient's mother proudly telephoned stating "My son is in the Army now." Somehow the psychiatrists at the induction center had missed his faulty adjustability. On May 9, 1943, the mother again telephoned and quite frantically exclaimed: "I hadn't heard from him for three weeks, and I have just gotten a letter from the commanding officer to whom I had written. The letter says: 'We regret to inform you that your son was courtmartialed April 22 for appropriating a car and driving it without permission.' He was sentenced to three months' solitary confine-

ment and hard labor." Had the local draft board been able to furnish the induction center with a brief statement of this lad's contacts with the psychiatrist and the reasons therefor, there might now be one less inmate in the guardhouse at Fort Monmouth.

Many more cases such as the foregoing could be cited. Intermittently army discharges come under our care. These, too, have been found to be more often mistakes in selection than unsalvagable neuropsychiatric disorders.

Whatever a man's race, color or creed, he has a highly personal philosophy of life and very personal perspectives. Behind them lie his instinctive motivations. Hence, if a man's native interests and conscious striving for their realization are too long or too rudely channeled into avenues not acceptable to him, it is not long until a disabling psychiatric disorder puts in its appearance. After all, every man cannot qualify as a jeweler, a baker or a grocer. Neither can all men qualify for the Army, the Navy, or other special divisions of the armed forces. Neuropsychiatric evaluation of men for the armed forces should therefore give seasoned thought to a frequent admonition by Colonel Porter:<sup>2</sup> "Often it is more a matter of vocational military unfitness than downright psychiatric misfitness for any task."

#### DIAGNOSTIC AND THERAPEUTIC REVIEWS

Diagnostic studies and therapy for any patient are limited by only two factors, time and cost, and these are mutually reactive one upon the other. If because of cost the patient can remain in the hospital only long enough to be assisted to some other setting, then laboratory determinations, x-ray examinations and special studies must be held to a minimum. This is also true for the more intensive and time consuming therapies.

It is judged that the results of diagnostic studies can best be outlined in tabular form. The results of therapy also may be thus represented.

Table I lists the number of neuropsychiatric patients admitted to the in-patient service of the Henry Ford Hospital for a period

<sup>2</sup> Colonel William C. Porter, Medical Corps, U. S. Army, Director, School for Military Neuropsychiatry, Lawson General Hospital, Atlanta, Georgia.

of 16 years, 1927 to 1942 inclusive. Except for a natural low during the depression years, this tabulation shows a progressive increase in admissions. This is judged to be supportive of the constancy and success of the division of neuropsychiatry as conducted for the past 20 years.

Table II records the diagnoses in seven liberal diagnostic groups for the years 1928, 1931, 1941, and 1942 in terms of number of patients. Due to some variations over the years as to the inclusions under borderline conditions and nervous diseases and injuries, these two classifications show greater variations than the other diagnostic groups. This is also reflected in Table III where percentages are substituted for the number of patients.

Table IV epitomizes services in the out-

TABLE I

NEUROPSYCHIATRIC PATIENTS ADMITTED TO HENRY FORD HOSPITAL

| Year      | Number | Year      | Number |
|-----------|--------|-----------|--------|
| 1927..... | 720    | 1935..... | 635    |
| 1928..... | 743    | 1936..... | 754    |
| 1929..... | 713    | 1937..... | 918    |
| 1930..... | 487    | 1938..... | 784    |
| 1931..... | 403    | 1939..... | 764    |
| 1932..... | 480    | 1940..... | 874    |
| 1933..... | 355    | 1941..... | 1,254  |
| 1934..... | 623    | 1942..... | 1,367  |

TABLE II

COMPARISON OF DIAGNOSES ON NP I.P.D. PATIENTS 1928, '31, '41, AND '42

| Diagnosis                           | Number per year |      |       |       |
|-------------------------------------|-----------------|------|-------|-------|
|                                     | 1928            | 1931 | 1941  | 1942  |
| Psychoneuroses .....                | 226             | 93   | 263   | 254   |
| Borderline conditions .....         | 180             | 96   | 122   | 197   |
| Nervous diseases and injuries ..... | 148             | 86   | 451   | 406   |
| Psychoses .....                     | 107             | 83   | 270   | 392   |
| Inebrieties .....                   | 52              | 31   | 121   | 82    |
| Constitutional psychopathies .....  | 27              | 11   | 23    | 33    |
| Mental deficiencies .....           | 3               | 3    | 4     | 3     |
| Total .....                         | 743             | 403  | 1,254 | 1,367 |

patient clinic of the division of neuropsychiatry for a period of 10 years, 1933 to 1943. Clinic visits include: psychometric, neurological, complete and partial physical examinations; also, lumbar punctures, pneumo-encephalograms, electro-encephalograms, intramuscular injections, venipunctures, and many other diagnostic and therapeutic procedures; all, in addition to office psychotherapeutic reviews and ministrations. Relatives interviewed forms an intimate part of all psychiatric practice, private and institutional; but does not receive the attention it should have in general hospital management because in the case of non-psychiatric patients management and doctor, nurse and attendant concern themselves primarily and directly with the patient only, relatives receive only secondary consideration. The neuropsychiatric patient is not given adequate consideration unless his relatives are intimately informed and involved. A review of the tabulations discloses not only constancy and demand for service, but also the prominent place relatives hold in neuropsychiatric care and treatment.

Tables V and VI show the disposition of in-patients admitted to the division of neuropsychiatry. Discharged to extramural supervision implies that such patients were further

TABLE III

PERCENTAGE TABLE ON COMPARISON OF DIAGNOSES IN NP I.P.D. PATIENTS 1928, '31, '41, AND '42

| Diagnosis                           | Percentage per year |      |      |      |
|-------------------------------------|---------------------|------|------|------|
|                                     | 1928                | 1931 | 1941 | 1942 |
| Psychoneuroses .....                | 30.4                | 23.1 | 21.0 | 18.6 |
| Borderline conditions ..            | 24.2                | 23.8 | 9.7  | 14.4 |
| Nervous diseases and injuries ..... | 20.0                | 21.4 | 36.0 | 29.7 |
| Psychoses .....                     | 14.4                | 20.6 | 21.5 | 28.7 |
| Inebrieties .....                   | 7.0                 | 7.7  | 9.7  | 6.0  |
| Constitutional psychopathies .....  | 3.6                 | 2.7  | 1.8  | 2.4  |
| Mental deficiencies ....            | 0.4                 | 0.7  | 0.3  | 0.2  |
|                                     | 100                 | 100  | 100  | 100  |

TABLE IV

COMPARISON OF OUT-PATIENT CLINIC SERVICE

| Year                     | 1933  | 1934  | 1935  | 1936  | 1937  | 1938  | 1939  | 1940   | 1941   | 1942   |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Clinic visits .....      | 4,200 | 4,840 | 5,456 | 5,804 | 6,271 | 5,925 | 6,643 | 8,692  | 9,379  | 8,861  |
| Relatives interviewed .. | 1,629 | 2,126 | 2,083 | 2,043 | 2,196 | 2,131 | 2,199 | 3,101  | 2,312  | 2,310  |
| Totals .....             | 5,829 | 6,966 | 7,539 | 7,847 | 8,467 | 8,056 | 8,842 | 11,793 | 11,691 | 11,171 |

directed and treated in the out-patient service. Included in this group are all patients "farmed out" in nursing homes, convalescent homes and in other carefully selected placements. Table VI shows that the number returned to the former attending physician is considerably less in 1941 than in 1931. This is judged to be due to the tendency of referring physicians to seek admission for psychotic patients for whom long waiting lists at state and county institutions postpone prompt or adequate attention. This is borne

modern facilities for its satisfying achievement.

The administrative demands and problems of conducting a division of neuropsychiatry as part and parcel of the department of medicine in a general hospital is a challenge that should be more liberally accepted. The associated difficulties are in no sense insurmountable. The advantages to the hospital, to its lay and professional personnel, and to the mentally ill patient far outweigh the disadvantages.

TABLE V

DISPOSITION OF I.P.D. CASES—1931

|                                                | Per cent of total | No. of cases |
|------------------------------------------------|-------------------|--------------|
| Discharged to extramural supervision .....     | 62.6              | 249          |
| Discharged to former attending physician ..... | 12.1              | 48           |
| Discharged as recovered.....                   | 11.5              | 46           |
| Transferred to other institutions .....        | 8.5               | 34           |
| Removed against advice.....                    | 3.0               | 12           |
| Deceased .....                                 | 2.3               | 9            |
|                                                | 100.0             |              |
| Companions .....                               |                   | 5            |
| Total .....                                    |                   | 403          |

out in part by the percentage of patients transferred to institutions being 2.5% higher in Table VI. The percentage difference in the group, discharged as recovered, is due to our increasing tendency to discharge patients more often as improved and to continue their treatment in the out-patient service. Percentage of recoveries would best be determined from a 'follow-up' review, but to date such study has not been made. The group, transferred to other services, in Table VI refers to patients admitted to the division of neuropsychiatry for conditions which were more properly treated in some other division of hospital.

### CONCLUSIONS

The admission to, and the housing of an insane patient in a general hospital is not new. Complete and successful integration of the admission and the treatment of such a patient in a general hospital is new and requires not only patience and tact, but also all

TABLE VI

DISPOSITION OF I.P.D. CASES—1941

|                                                | Per cent of total | No. of cases |
|------------------------------------------------|-------------------|--------------|
| Discharged to extramural supervision .....     | 62.8              | 786          |
| Discharged to former attending physician ..... | 5.2               | 65           |
| Transferred to other institutions .....        | 11.0              | 138          |
| Discharged as recovered.....                   | 3.0               | 38           |
| Removed against advice.....                    | 8.8               | 110          |
| Transferred to other services..                | 4.0               | 51           |
| Deceased .....                                 | 3.6               | 46           |
| Companions .....                               | 1.6               | 20           |
| Total .....                                    | 100.0             | 1,254        |

General hospitals, thoughtful of their facilities and with careful training of their personnel and the guidance of a qualified psychiatrist, can do much to meet the problems of the returning neuropsychiatric casualties of the present war. The results of caring for neuropsychiatric patients in a general hospital are highly gratifying. Such care does relieve our state hospitals and disseminates a more wholesome understanding of the neuropsychiatric patient among our professional colleagues, and most of all, among the people that constitute the general public. Morbid fears are reduced and references to "living death" are less frequent.

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## DISCUSSION

JOHN ROMANO, M.D.\*—Dr. Heldt is to be congratulated on the consistency of his established

program in a general hospital. As is well known, psychiatric facilities in a general hospital may be of various types. The earliest and most common type may vary from the occasional visit of a psychiatrist for purposes of immediate custodial disposition to more intimate teaching services. A sec-

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ond type is a liaison service such as was developed in Colorado; a third type is that in which the academic and hospital rank of the psychiatrist of the general hospital is included in that of medicine, and in which the psychiatrist may assume medical, neurologic and other responsibilities in addition to those of psychiatry.

Obviously, the success or failure of any type of service depends upon the training, capacity and interest of the psychiatrist, the respectivity of the non-psychiatric staff, and the possible area of operation in which the psychiatrist is able to work. In addition to hospital and clinic service, new areas of investigation and new methods of teaching in psychiatry become possible.

Traditional training in psychiatry, with its emphasis on neurology and psychotic states is of importance, but the psychiatrist must acquire also an understanding of the greater and more common

problems of neurotic personalities with or without physical disease, the field called psychosomatic medicine, the problems of illness, convalescence, chronic disease and disability. The success of future programs will be dependent upon the education of psychiatrists with greater awareness and skill in medicine on the one hand, and on modern interpretative psychology on the other. Recently Kubie outlined a blueprint for the future, the principle and the details of which should be studied by those who will be responsible for the further development of this field in psychiatry.

The trained psychiatric social worker as her work relates to the staff, the house officer, the medical student and the nurse will help inestimably to effect a better understanding of social and cultural phenomena as they impinge on sick and convalescent patients.

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## RAPID CHANGES IN THE O<sub>2</sub> TENSION OF CEREBRAL CORTEX DURING INDUCED CONVULSIONS<sup>1</sup>

E. W. DAVIS, M.D.,<sup>2</sup> W. S. McCULLOCH, M.D., AND E. ROSEMAN, M.D.<sup>3</sup>

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Prior to 1933 the popular explanation of the onset of convulsions was in terms of spasm of the cerebral blood vessels. This was supposed to account for the commonest pathological findings, all of which could be interpreted as anoxic changes. Work done at Yale by Stone, Marshall and Nims(8) had indicated that reduced oxygen supply resulted in the production of lactic acid, and recently Stone, Webster and Derbyshire(9) have found that in induced convulsions the lactic acid content of the brain may be increased as much as seven-fold. Hence there was reason to believe that anoxia occurred during convulsions.

On the other hand, since 1933 all attempts to detect diminution in cerebral circulation have shown *no* initial change and a subsequent increase. One hypothesis would reconcile these findings—namely, a relative anoxia due to an increased demand by the excited cortex. Thanks to Drs. Bronk, Brink, Davies and Milliken(1), methods have been established for the measurement of the oxygen tension of the cerebral cortex. For the present purposes, their electrode, whose calibration is more meaningful than that here employed, could not be used to follow rapid changes, and recourse was had to the oldest form of polarography, as originally performed by E. Salomon(7) in 1897 and 1898. His procedure was to plot the current flowing through the unknown between a negative platinum point and a large non-polarizable electrode. When the current is plotted as a function of the voltage, there appear a series of plateaux, the lowest of which is determined by a reaction in which

$2\text{H}^+ + \text{O}_2 + 2\text{ electrons go to } \text{H}_2\text{O}_2$ . So long as the voltage applied is that corresponding to the plateau, the current measures the oxygen tension. Since the calibration of such an instrument can be performed only in stirred solutions of known oxygen pressures, and the brain is not, properly speaking, a stirred solution but depends upon diffusion to maintain its oxygen tension, it was thought best not to attempt to state the observed oxygen tensions in terms of pressures

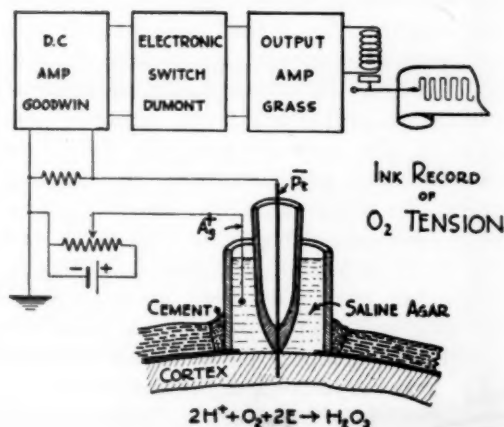


FIG. 1.

but only in terms of changes from the observed normal of the cortex studied. Therefore the findings are reported in arbitrary units of such a size that 0 represents the resting oxygen tension of the brain, and -20 to -30 represents the oxygen tension when the animal is drowned for upwards of two minutes in nitrogen.

Fig. 1 shows the typical setup of the apparatus. In brief, it is as follows: A platinum point is sealed through the end of a small glass tube which is then imbedded in saline agar containing an Ag-AgCl electrode having a large surface, and the whole is surrounded by a glass tube circa  $\frac{3}{8}$ " in external diameter. The skull is trephined, the dura incised and reflected. The electrodes

<sup>1</sup> Read at the ninety-ninth annual meeting of the American Psychiatric Association, Section on Convulsive Disorders, Detroit, Michigan, May 10-13, 1943.

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are then inserted through the trephine opening so that the platinum point pierces the thickness of the cortex and the agar wick rests on its surface. The crack between the skull and the glass tube is filled with wax, and the entire joint is then sealed with colodion. 0.9 of a volt is applied from a potentiometer and through a series resistance of 1 megohm. The voltage drop across this resistor is picked up with a Goodwin D-C amplifier, output to an electronic switch which serves as a chopper and which, in turn, activates the output stage of a Grass ink writing oscillograph. Thus the envelope of the resulting trace measures the change of the oxygen tension from its normal value.

All records were obtained from animals previously operated upon under full anaesthesia with ether or nembutal, but no tracings were made until hours after anesthesia had ceased. The animal was placed in a comfortable position upon a board. Two electrodes for electroencephalogram and two for electrocardiogram were attached. In some of the later experiments the blood pressure was recorded from the femoral artery. In these cases the blood was rendered non-coagulable with chlorazol fast pink (1 cc. of a 5 per cent solution per kilo), which has previously been shown not to influence any of the parameters under investigation. Complete paralysis was obtained with beta erythroidine hydrobromide, 5 mgm. per kilo of body weight, intravenously. Artificial respiration was always established at 50 cc. per stroke and 30 strokes a minute from a Starling Ideal respirator pump.

When all was in readiness, the animal was caused to breathe first pure nitrogen until the brain waves had disappeared, and thereafter either pure oxygen or a mixture of 5 per cent or 10 per cent carbon dioxide in pure oxygen. In both cases the alteration in the current was recorded, thus roughly calibrating the sensitivity of the oxygen tension recorder.

When the apparatus had been so checked, a convulsion was induced either electrically or by administration of some drug intravenously. Whether induced by electrical stimulation or by aminophylline, caffeine, coramine, metrazol, strychnine or picrotoxin, the seizure was always accompanied by a

marked fall in oxygen tension(6). Initial seizures produced by any of these drugs regularly showed the fall in oxygen tension beginning several seconds before the first electrical sign in the cortex and reaching its nadir about half a minute after the last large potential of the seizure. With most of these drugs the fall amounted to more than one-third and sometimes to as much as three-fourths of the total fall in oxygen tension that could be produced by drowning the animal in nitrogen. When, due to repeated doses of convulsants or slow injections, status epilepticus developed, so long as the seizures were sufficiently separated in time, the findings were essentially similar. It was only when the seizures followed each other in quick succession than any confusion occurred. What seems to happen when seizures are nearer together than one minute is that the rise in oxygen tension following the previous seizure is not counteracted by the fall due to the oncoming seizure until after this seizure is well under way (see Fig. 5). Thus in understanding the oxygen tension we must look only to the initial seizures or those in which the seizures are widely separated.

The experiments of Gibbs(2), Gibbs, Lennox and Gibbs (3), Penfield, von Sántha, and Cipriani(5), and Jasper and Erickson(4) have shown that there is no change in the circulation of the brain prior to or during the initiation of an induced seizure, and that there is a definite increase in circulation thereafter. It seems obvious, then, that the fall in oxygen tension occurs not only prior to the onset of the electrical seizure, but also long prior to any change in circulation, and that the only change in circulation observed is an increase which would cause a rise in oxygen tension. Hence the initial fall in oxygen tension must indicate a rise in the oxygen consumption by the brain even before it reaches such hyperexcitability as to break into a spontaneous seizure.

Fig. 2 represents these findings. The upper tracing is the electroencephalogram, the second, the electrocardiogram, and the third is the envelope indicating oxygen tension. The seizure has been induced with metrazol. The oxygen tension begins to fall considerably before there is any evidence of



electrical activity in the cortex and begins to rise after the activity has subsided. There has been no change in the blood pressure during this seizure.

With all of this in mind, it is possible to take up the convulsant action of the sulfa drugs which are now in current use. This work was begun at the suggestion of Dr. Jasper, who merely wished to add to his own

both expressed in arbitrary units. The injection of sodium sulfathiazole causes an almost immediate drop in the oxygen tension and a decrease in heart rate. Abnormal brain waves appear at a blood level of circa 150 mgm. per cent. Seizures occur at a blood level of circa 390 mgm. per cent. The onset of the seizure causes the oxygen tension to drop to or below the level obtained

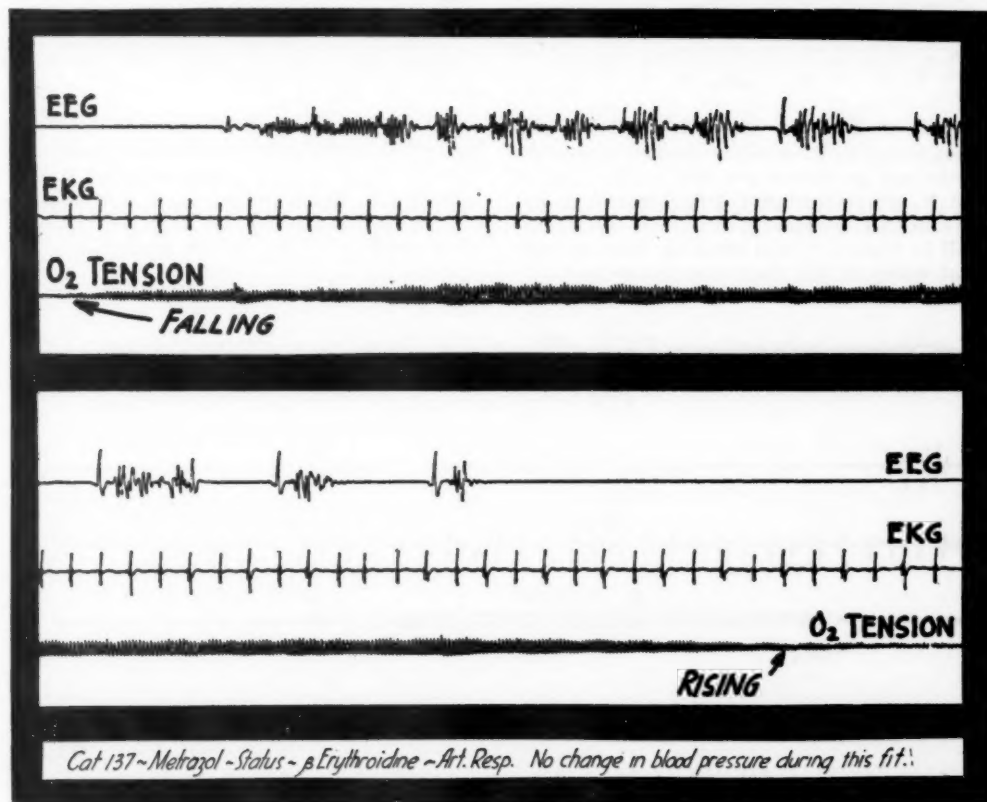


FIG. 2.—Note the fall in oxygen tension beginning before the electrical manifestations of the seizure.

knowledge of their convulsant action by studies of the oxygen tension.

Sulfanilamide and sulfadiazine given intravenously in large doses did not cause seizures and nothing further need be said about them. The effects of sulfathiazole and sulfapyridine can best be demonstrated by figures. Fig. 3 shows at the extreme left the calibration of the oxygen tension electrode system *in situ*, first with respiration of pure  $N_2$  with a fall to  $-26$ ; next with 10 per cent  $CO_2$  in  $O_2$  and a rise to  $+40$ —

with pure nitrogen. The animal passes rapidly into status epilepticus and finally dies of cardiac failure.

Fig. 4 illustrates the effect of sodium sulfapyridine. Abnormal brain waves appear at blood levels of 15 to 35 mgms. per cent, and seizures at blood levels of 55 to 65 mgms. per cent. At the onset of the seizures the oxygen tension is usually at a level of approximately half that reached with pure nitrogen. If nembutal is given to stop the seizure, there is a slight initial drop of oxy-

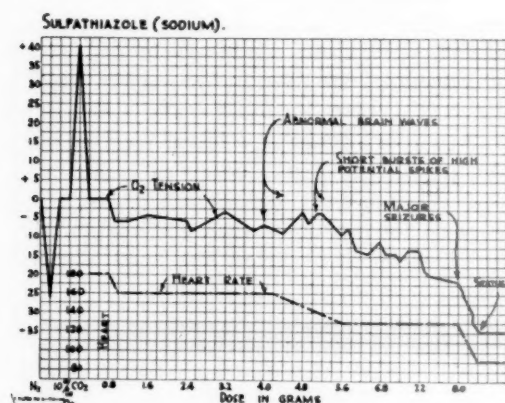


FIG. 3.—Cat No. 119. Animal paralyzed with erythroidine and under artificial respiration at 50 cc. per stroke and 30 strokes per minute. Respiration of pure N<sub>2</sub> gives downward deflection and 10 per cent CO<sub>2</sub> in O<sub>2</sub> gives upward deflection. No significant fall in oxygen tension until the onset of high potential spikes in the electroencephalogram.

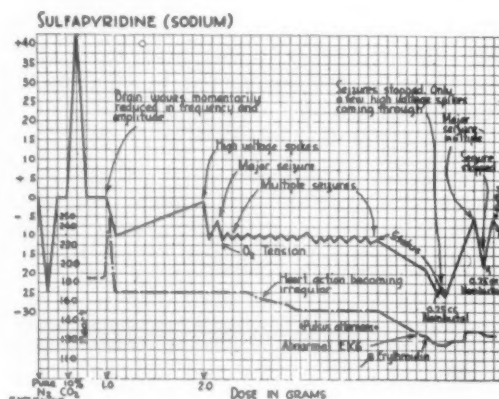
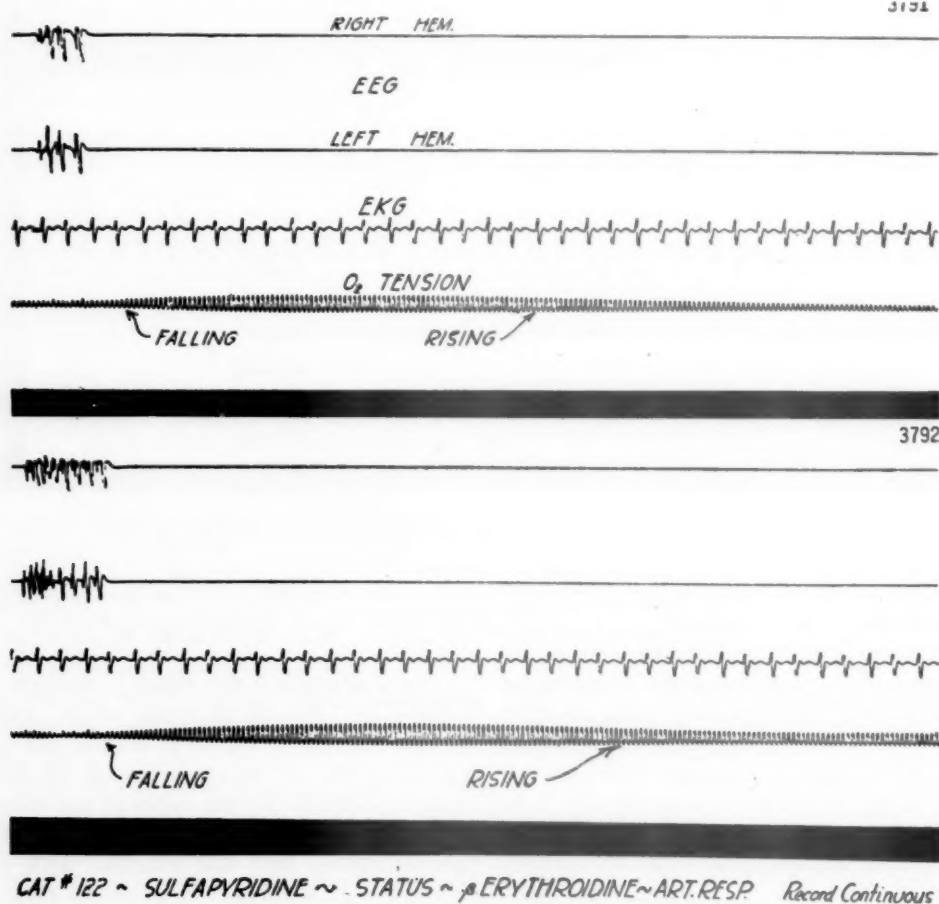


FIG. 4.—Cat No. 122. Procedure similar to that in cat No. 119 (Fig. 3). The oxygen tension drops abruptly at the onset of high potential spikes and falls rapidly during status. There is a rapid rise in oxygen tension associated with the cessation of the seizures following intravenous nembutal.



CAT # 122 ~ SULFAPYRIDINE ~ STATUS ~  $\beta$  ERYTHROIDINE ~ ART. RESP. Record Continuous

FIG. 5.—Excerpt from long record of status with seizures every 30 seconds. Note belated fall in oxygen tension. For explanation see text.

gen tension followed by an immediate rise associated with the cessation of cortical activity.

The onset of seizures induced with sulfathiazole and sulfapyridine does not cause a pre seizure fall in oxygen tension similar to that seen with most other convulsant drugs. In each case, however, there is a long period preceding the seizure in which the cortical activity is increased and the oxygen tension gradually drops. Undoubtedly part of the drop in oxygen tension can be explained by the effect of the drugs on the cardiovascular system, and a fall in blood pressure, but there remains the abrupt drop at the onset of each seizure which must be attributed to the events taking place in the cortex. How small a burst of activity can cause a change in oxygen tension is shown in Fig. 5. This is a record from an animal in status epilepticus induced with sulfapyridine. The oxygen tension is lowered by each burst of cortical activity and gradually rises until another burst lowers it again.

#### SUMMARY

A relative anoxia of the cerebral cortex occurs before, during and after convulsions induced electrically or by a variety of drugs. This relative anoxia is believed to be caused by increased cerebral metabolism.

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# CLINICAL AND EEG STUDIES IN OBSESSIVE-COMPULSIVE STATES <sup>1</sup>

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AND

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An extensive literature has accumulated dealing with patients exhibiting obsessive-compulsive phenomena. These studies have been largely concerned with psychodynamic interpretations attempting to relate the development of the symptoms to various emotional and environmental factors. Other studies have concerned themselves with classification of the phenomenology into the different psychiatric entities.

This present communication deals with EEG studies conducted on a group of psychiatric patients who exhibited as the most prominent features of their illnesses marked obsessive-compulsive phenomena. Our attention to this study was at first directed by chance observations made in a small group of obsessive-compulsive neurotics whose EEG's were abnormal and who in some instances exhibited "convulsive-type" patterns, or a paroxysmal cerebral dysrhythmia. We then extended our observations to include all types of psychiatric patients manifesting marked obsessive-compulsive traits as the dominant and leading feature in their clinical pictures.

## MATERIAL AND METHODS

EEG and clinical observations were carried out on 31 patients, 29 of these having been admitted to the wards of the Psychiatric Institute and Hospital at sometime during the past 24 months, and the other two having been studied in the OPD. All patients were observed for a minimum period of 3 months while the majority had been followed for periods exceeding 6 months. The patients were about equally divided as to sex, 16 being females and 15 males. Their

ages ranged from 13-42 years, with an average of 24.5 years. The age distribution was as follows:

|                              | Patients |
|------------------------------|----------|
| Under 20 years of age.....   | 14       |
| 20 to 29 years of age.....   | 8        |
| 30 to 39 years of age.....   | 4        |
| 40 or over years of age..... | 5        |

A cross-sectional and longitudinal history was carefully obtained in each case and particular cognizance was taken of the family history with respect to the possibility of convulsive disorders and psychopathic manifestations of the blood relatives of each patient.

Of the entire group studied, 26 are believed to be classifiable as psychoneurosis, obsessive-compulsive type, but 2 of these had petit mal; the remaining 5 were classified as schizophrenia. Amongst the psychoneurotics, one patient exhibited fairly definite petit mal attacks on an average of 2-4 per week, and another patient manifested occasional "absences" of a questionable nature for short periods of time. None of the remainder of the group and none of the schizophrenic patients showed any convulsive manifestations. Also, the schizophrenic patients were not deteriorated or hallucinated, but in fact fairly well-adjusted and maintained good contact with their environment.

All patients were neurologically normal; those cases which gave any history of definite trauma to the head, or of encephalitic or suspicious encephalitic involvement at some time in their life, were excluded from our study. Also excluded were cases who had received any form of shock treatment prior to the time of recording of the electroencephalograms, since the EEG patterns could readily be altered by such treatment.

Electroencephalograms were done routinely in all cases prior to the institution of any diagnostic or therapeutic procedures which might have conceivably altered the

<sup>1</sup> Read at the ninety-ninth annual meeting of The American Psychiatric Association, Detroit, Michigan, May 10-13, 1943.

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EEG pattern. In most of the patients in our series, two or more EEGs were taken at different times. Recordings were made by means of a 2-channel, push-pull amplifying and ink-writing system under approximately basal conditions, with the patient maintained in a reclining or semi-reclining position. A two-minute period of hyperventilation was carried out routinely by each patient during the EEG recording. The bipolar system of recording was utilized, with bilateral FM, MO and FO leads employed, in addition to trans-frontal, trans-motor and trans-occipital leads.

#### OBSERVATIONS

The most striking feature noted was the relatively high incidence of abnormal EEG's obtained from these cases with obsessive-compulsive phenomena. Twenty out of the total of 31 or 64.5 per cent showed abnormal records varying from mild to severe degrees of abnormality. Of this number of 20 cases exhibiting electro-cortical dysfunction, 14 showed what might be termed "convulsive-type patterns", consisting of occasional or frequent runs of serial 2-4 cycle per second potentials of high amplitude. In most of the cases (12 out of the 14) this serial slow activity ("paroxysmal cerebral dysrhythmia") was noted only after a period of hyperventilation not exceeding two minutes, and was not observed in the record prior to hyperventilation. The remaining 6 of the 20 cases with abnormal records showed characteristically, irregularities and disorganization of pattern in their electroencephalograms. Thus, 70 per cent of the 20 cases which showed EEG disturbances or 45 per cent of the entire group of 31 patients showed "paroxysmal cerebral dysrhythmias," either before or after a short period of hyperventilation.

Two cases, or 6.6 per cent, showed borderline records which could not be definitely classed as abnormal, but nevertheless exhibited mild irregularities or disturbances in pattern.

Only 9 cases in the series, or 28.9 per cent, had EEG patterns which were classifiable as normal.

Further analysis of our observations reveals some interesting findings regarding the

incidence of abnormal records in the various age groups (Fig. 1). It may be noted that the greatest incidence of abnormal records occurred in the age group below 30 years of age, with 17 of the 22 patients, or approximately 77 per cent, in this age group exhibiting abnormalities. The total number of cases over 30 years of age was only 9, and one-third of these showed EEG disturbances. However, it is believed that this is an insufficient number of cases to draw any conclusions from, or to warrant further statistical presentation.

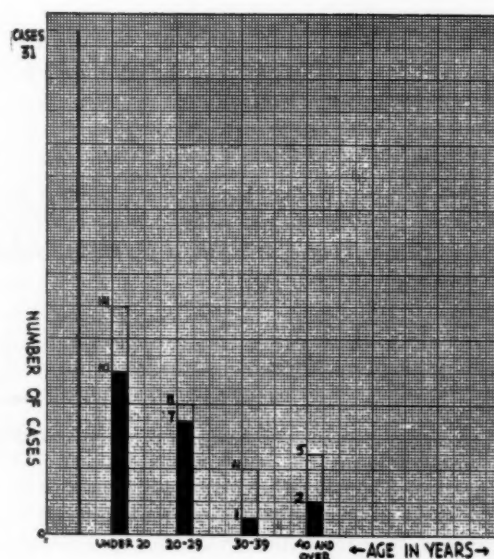


FIG. 1

In evaluating the family histories for psychopathy, we considered as positive only those individuals of the family or collateral line who manifested definite psychoneurotic or psychotic symptoms which necessitated medical care, or which seriously interfered with their abilities to adjust to the community. It was found that of the 20 cases with abnormal EEG's, 40 per cent showed definite histories of psychopathy in the family. Of the remaining 11 patients whose records were not considered abnormal, 3, or 27.3 per cent, had a family history of psychopathy. Although these figures might suggest a possible significant correlation between the presence of psychopathy in the family tree and abnormalities in EEG tracings it should be again stated that statisti-

cal computations in such small groups should be taken with caution.

No particular correlation could be found between the severity of the obsessive-compulsive symptoms, and the incidence of abnormalities in the EEG's.

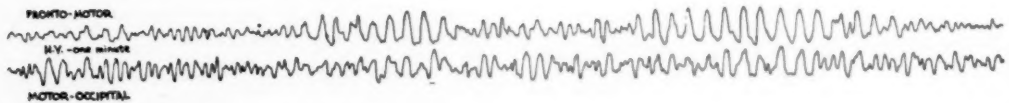
An important aspect of our observations may be brought out by briefly presenting the case histories of 4 patients (see appen-

serial, high amplitude 2-4 cps waves (Fig. 2) of the type often seen in convulsive disorders.

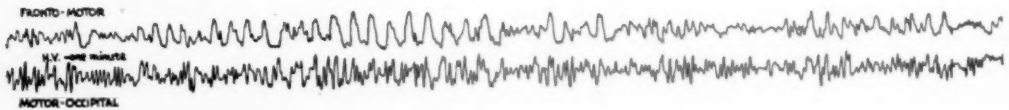
If one wished to eliminate cases 3 and 4 from our statistical computations of EEG abnormalities on the basis that they were suffering from epilepsy and therefore a cerebral dysthymia might naturally be expected, the percentage abnormality for

## OBSESSIVE - COMPULSIVES

### CASE 1 V.A.



### CASE 2 E.W.



### CASE 3 R.K.



### CASE 4 A.W.

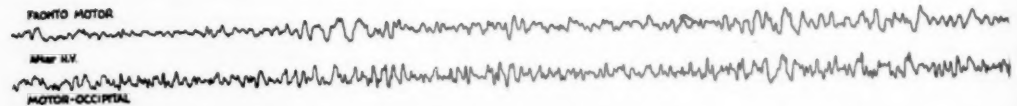


FIG. 2

dix), one of whom presents the classical type of an obsessive-compulsive neurosis, the second shows episodes of severe obsessional thinking recurring periodically with clear intervals, and the remaining two presenting either definite petit mal attacks or suspicious "absences," in addition to their obsessive-compulsive activity. The latter phenomena, in both cases, preceded by some months the onset of the fit-like manifestations.

The grouping of these 4 cases together suggests the possibility of a relationship between obsessive-compulsive activity and fit-like or convulsive manifestations. It may be noted that all of these 4 patients exhibited

the series of the remaining 29 patients would become 62 per cent, certainly not an appreciable change in the percentage figure of 64.5 per cent already referred to above.

### COMMENT

A high incidence of abnormal EEG's appearing in obsessive-compulsive patients has not been previously reported in the literature, so far as we are aware. A number of EEG studies have been reported for psychiatric cases and have dealt largely with the findings in schizophrenics, manic-depressives, psychopaths and delinquents. Davis

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and Davis(1), and Davis(2, 3) have described EEG findings in patients diagnosed as suffering from schizophrenia, and from manic-depressive psychosis. Finley and Campbell(4) in an excellent survey, reported their findings in schizophrenia, and also exhibited numerous EEG tracings obtained from patients showing different neuropsychiatric conditions(5). Hill and Waterson(6) reported their EEG findings in a group of 151 psychopathic personalities, including "schizoid, hysterical, hypochondriacal, depressive and anxious psychopaths, and the pathological liars." They also included the more aggressive psychopaths exhibiting overt aggressions and anti-social behavior. However, so far as we can determine, it appears that in none of the reports mentioned did the incidence of abnormal EEG's approach the high figure noted for our group of obsessive-compulsive patients. It is very possible, of course, that the criteria used for determining abnormality might differ somewhat amongst different groups of investigators. We utilized the general criteria set down by one of us (B. L. P.)(7) some time ago, which includes a markedly disorganized and irregular pattern with occasional slow potentials, or the appearance of a significant number of slow waves exhibiting a frequency rate of less than 7.5 cps and not necessarily associated with a disorganized and irregular pattern with occasional slow potentials. Moreover, if definite slow waves appeared with appreciable incidence in the adult record or to a significant degree in that of the adolescent's, during or following a standard two-minute period of hyperventilation, the electroencephalogram was also classified as abnormal. In a control group of over a hundred clinically normal individuals which we studied ranging in age from 18 to 30 years, and selected at random at an induction center, we found that not over 10 per cent exhibited serial, high amplitude 2-4 cps waves even after a two-minute period of overventilation.

In our own series of over 400 psychiatric patients of all types subjected to the standard EEG recording, including three separate 2-minute periods of overventilation during the same recording, there was revealed an incidence of approximately 30 per cent

abnormalities, or a little less than half the incidence of disturbed records noted in the small group of obsessive-compulsive patients. It should be added that this relatively large number of 400 patients included not only the obsessive-compulsives already mentioned, but many disturbed and deteriorated patients. One might be inclined to believe, therefore, that obsessive-compulsive phenomena dominating a clinical picture are more often associated with some electrophysiologic disturbance of the brain than are many other types of psychiatric disorders, with the possible exceptions of seriously deteriorated or markedly catatonic patients. It is interesting, in this connection, to mention the fact that of all the psychoneurotics, the severe obsessive-compulsive is usually the least amenable to psychotherapy, and whereas some psychoneurotics, and a goodly portion of the psychotics respond to the various forms of shock therapy, it is practically without effect or of only very temporary value in the great majority of the obsessive-compulsives. Whether any actual relationship exists between electro-cortical abnormalities and responses to therapy is, of course, open to question, but it might be of interest to evaluate the relative therapeutic responses of patients with normal and abnormal EEG's.

The high incidence of bursts of serial 2-4 cps waves called convulsive-type patterns, appearing so readily after a short period of hyperventilation in many of the cases studied, lends additional interest to the observations. This finding suggests some instability in electro-physiologic activity, and might also suggest the presence of a "latent convulsive tendency," in which the threshold for the development of the peripheral muscular manifestations of a fit is very high. It may be noted that the blood relatives of epileptics show a high incidence of such patterns in their EEG records(8, 9) in spite of the fact that they may never manifest any objective evidences of epilepsy. Lennox, Gibbs and Gibbs(10) stated, "in any large group of normal subjects, approximately 10 per cent will have electroencephalograms that show abnormalities; such as are encountered in epileptics." They add that certain of these "abnormal normals" are borderline or asymptomatic epileptics, or carriers of a

predisposition." It may be noted that in cases 3 and 4, petit mal attacks and suspicious "absences" were manifested a number of months following the onset of severe obsessive-compulsive activity. An interesting conjecture here is whether there is a form of psychologic fit or "spasm" which is not in the nature of what we commonly conceive of as psychomotor variants of epilepsy with temporarily altered personalities, etc., but as obsessive-compulsive activity. It may be observed that in case 2, the compulsive symptoms recurred periodically with fairly clear periods intervening, thus suggesting a "paroxysmal" cerebral type of psychologic activity, somewhat analogous to the paroxysmal cerebral dysrhythmia noted in the EEG's. However, we wish to stress that because two different clinical states such as epilepsy and obsessive-compulsive psychoneurosis may manifest certain common findings in the EEG it is not necessarily an indication that these two states are related to each other. It is well-known that many different conditions may produce very similar EEG patterns. Correlations were somewhat prematurely attempted between schizophrenia and epilepsy because some of the schizophrenic patients exhibited cortical dysrhythmias resembling those observed in epileptics (11). But more recent observations reported by Finley and Campbell (4) and by P. Hoch (12) have largely discounted such considerations; the former investigators, in fact, could find no significant relationship between schizophrenia and epilepsy on the basis even of EEG patterns, as earlier reported.

The fact remains, nevertheless, that most of our obsessive-compulsive patients exhibited some type of cortical physiological disturbance or instability as reflected by the electroencephalogram and the true significance of these findings can be understood only after we understand fully the physiologic significance of serial slow waves, or of disorganized activity in the EEG record.

On the hypothetical basis that there might be some relationship between convulsive states and obsessive-compulsive states, dilantin in dosages of grains  $1\frac{1}{2}$  three times daily was given to 4 patients for a period of three weeks. No significant alteration in the symptoms was observed in any of the cases.

In analyzing the family histories in the entire group of 31 patients, it is found that about 35 per cent gave definite positive histories of psychopathy. If we divide our cases into those which exhibited abnormal EEG's and those which did not, we observe that 40 per cent or 8 out of the 20 in the abnormal group, and 3 out of 11 or 27 per cent in the latter group, gave positive family histories. The different percentages of family psychopathy obtained in each group may possibly suggest some significant relationship between electro-cortical dysfunction and histories of family psychopathy, but it is believed that no valid conclusions can be made in this regard unless one employs much larger groups of patients for study.

An interesting finding which might be commented upon is the significant difference in the incidence of abnormal records in the different age levels. Of 22 cases below the ages of 30 years, 17 or about 77 per cent showed electro-cortical abnormalities. In the 9 patients over 30 years of age, 3 or approximately 33 per cent evidenced abnormal records. Furthermore, one of these 3 patients gave a history of the illness dating back 15 years ago, beginning about the age of 18. The other 8 cases over 30 years old all had fairly recent onset of symptoms, with the longest duration of illness not exceeding 2 years and 6 months prior to observation by us.

#### SUMMARY

1. A series of 31 patients presenting as a dominant feature in their clinical picture obsessive-compulsive phenomena were studied clinically and electroencephalographically. Twenty-four of these cases were classifiable as psychoneurotic, obsessive-compulsive type, 2 as epileptic and the remaining 5 as schizophrenia.

2. Twenty of the total of 31 patients, or 64 per cent, exhibited patterns which were classifiable as abnormal. Of these 20 cases 14 showed serial 2-4 cps potentials of high amplitude either before or after a two minutes period of hyperventilation. Approximately 29 per cent of the obsessive-compulsive patients studied exhibited records which were classified as definitely normal.

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hibiting electrocortical dysfunction occurred in the age group below 30 years of age.

4. Approximately 35 per cent of the entire group gave definite positive histories of psychopathy in the family. Of the cases showing electrocortical dysfunction 40 per cent gave positive histories while of the patients showing no EEG abnormalities 27 per cent gave positive family histories.

#### CASE HISTORIES

CASE 1.—V. A., a 19-year-old American male of Italian parentage, manifested obsessive-compulsive behavior from his 13th year, when he developed counting compulsions and obsessive sexual thoughts. During the last 3 years he elaborated a ritual preparatory to sleep and became intolerable, quarrelsome and dictatorial. He showed marked anal interests.

The father is quiet, generally morose and irritable. The mother has been extremely overprotective. A brother is described as nervous and showing similar symptoms. A paternal uncle became a recluse suddenly while studying for the priesthood.

The patient's early development was essentially normal, but he became a restless, stubborn and aggressive child. At 4 he had "stomach trouble" for which he was given repeated enemata. He was an excellent student. He had no boy friends, but became popular with girls. He was hospitalized at 9 for appendectomy and at 10 for a fractured leg. On both occasions he was extremely apprehensive lest he might die.

At 13 he developed a habit of shutting his eyes, moving 2-3 steps forward and then 2-3 steps backward. Soon after he began to have obsessive sexual ideas and became worried about his effeminate appearance. At 15-16 he began to indulge in anal self-manipulations. But he was always very clean in all his personal habits. About 3 years ago he developed a ritual, in which the number 3 was extensively involved, before retiring. He became tyrannical and quarrelsome, and employed expressions with bizarre and obscene connotations. For 2 years he had been courting a girl with whom he indulged in anal play. He also developed the habit of combing his hair and rubbing his back almost continuously. For 1½ years he did not wash his hair for fear of catching cold. At the time of admission, June 22, 1942, he was doing well scholastically in college. He is small and feminine in appearance. During hospitalization he was extremely neat and fastidious, especially about his hair. The sensorium was intact. Insight was good. He tended to be infantile and immature in his behavior generally. The EEG was abnormal and exhibited serial, slow activity as noted in Fig. 1.

CASE 2.—E. W., an 18-year-old unmarried Jewish girl, for two years has had periodic strong urges to kill. These episodes at first occurred about every three months, but recently became more frequent.

Her father, a queer and seclusive person, was convicted of arson when the patient was 12, adjudged insane and committed. The diagnosis was "psychosis with psychopathic personality." The mother is a possessive, domineering and rather paranoid individual, markedly overprotective of patient. A 32-year-old sister has been institutionalized since 13 with a diagnosis of "psychosis with mental deficiency." A paternal aunt is said to have been psychotic.

The patient had rickets at one. She did poorly in school failing in three elementary grades. She hated her teachers and was distressed by her failures. She shared her mother's bed and frequently witnessed parental intercourse, and thus began masturbating at about four. This habit continued up to the present, always accompanied by fantasies of intercourse. She indulged in considerable sex play with other girls. Her mother frequently beat her severely and the patient sought protection with her father. After his commitment the patient became more defiant and had frequent temper tantrums which were handled by her mother with brutality and threats of desertion.

Menarche took place at 14. In her first year of high school her work was better than average, but soon deteriorated. She was popular with girls, but her mother forbade her to have boy friends. The family's financial situation was always precarious.

As early as the patient can recall she has been over-clean and over-orderly in her habits. She has always also feared the dark and possible attack by strange men. She feared, in addition, becoming diabetic or insane, both of which conditions the father had. After 16 she added fear of epilepsy to her phobias and then a fear of cancer and appendicitis.

Two years ago, while reading a murder story, the patient felt commanded by an inner voice to kill. She was impelled toward her mother in the kitchen. As she struggled with this terrifying impulse, she felt hot, weak and exhausted. This horrible obsessive episode lasted about five to ten minutes, and recurred about every three months. During the intervals she was free from any symptoms. About six months before admission, the attacks become more frequent and lasted up to an hour or so. The impulse would often waken her in the middle of the night. The compelling inner voice which the patient recognized as a strong thought, also began to appear during the day. About two months before admission, she suddenly developed a severe generalized headache which persisted for about five weeks, and then became intermittent and less severe. On two occasions, while in a bus and subway train, she became dizzy and weak and begged her friend to make the vehicle move more slowly and to protect her from any harm. One day in November, 1941, she became weak, dizzy and terrified in school and had a crying fit. She lost her ambition, became depressed, crying a great deal, living in constant fear of the recurring attacks. She often felt unreal, as though not herself.

Physical examination was not remarkable. Laboratory findings were negative except for abnormal

electrocortical activity, suggesting paroxysmal cerebral dysrhythmia. She was friendly and cooperative, but rather immature, highly suggestible and dependent. She showed fair judgment and good insight. Psychometric examination revealed dull normal intelligence. Her preoccupation with cleanliness was very apparent early in her stay in the hospital. Patient responded well to psychotherapy.

**CASE 3.**—R. K., a 20-year-old girl manifested since early childhood numerous obsessive-compulsive phenomena. In addition, she showed recurrent attacks of "absences" of a petit-mal type since the age of 5. She has also been subject to repeated depressions, and had recently made two suicidal attempts.

Of four children of a great uncle on the maternal side, one was paralyzed from birth; another had dementia praecox; a third committed suicide. Mother, a moody, worrying and unsociable person, has persistently favored the older sibling who is a quiet and seclusive young man.

The patient was an unwelcome child. At 2 she became a feeding problem, was extremely irritable and had numerous temper tantrums. At 10 there was a period of several months of vomiting. Her mother was prone to be extremely critical of her. The patient's home life was very unhappy and she was very jealous of her favored brother. Her scholastic progress was good but she was seclusive, generally irritable and moody and therefore made very few friends. She began to masturbate frequently at 13. She permitted her brother to masturbate against her buttocks at 17.

At about the age of 4 the patient developed increasingly severe obsessive-compulsive behavior involving touching, counting and reading. Some months after this, she also began to have recurrent momentary episodes of confusion or "absences" followed by amnesia for these periods. Later in childhood, and during adolescence, up to the present time, these confused periods have at time been prolonged for periods lasting about five minutes.

While in school she had numerous "crushes" on other girls. At 19 she unsuccessfully attempted suicide with illuminating gas, after some violent quarreling at home. Shortly after this episode she developed numerous rapid tic-like compulsive movements of the head and shoulders, and would frequently jerk her head from side to side. A few months before admission into the hospital she was repulsed in a homosexual episode and again unsuccessfully attempted suicide. As a result of this the patient was expelled from college. Her obsessive compulsive behavior at this time was severe and she became markedly depressed. She was admitted to the Institute June 9, 1942.

Physical examination, including neurological, was essentially normal. Numerous compulsive tic-like movements were observed during her stay on the wards. She had several "petit mal-like" absences or confused periods and in fact the patient professes to have no recollection whatsoever of having been admitted to the hospital and could not recollect what was done to her during the preliminary routine admission procedures. The nurses who observed

her in an "attack" during mealtime stated that she stared wildly in front of her, got up from the dining room table and attempted to leave the room. When asked where she was going, she talked in a confused, irrelevant manner. After several minutes, she returned to the table, and seemingly had an amnesia for her actions. On one or two other occasions, she was observed to be staring ahead of her, motionless, and would not respond to questions directed at her; after a number of seconds, she seemed to "come to," appeared bewildered and could not remember what she had been doing. At no time, did the patient fall to the ground, nor did she ever develop the motor manifestations of a convulsive seizure. Anti-convulsant therapy consisting of dilantin and phenobarbital appeared to be without any effect on the symptoms. She proved unamenable to psychotherapy over a period of six months. Hypnosis attempted on a number of occasions did not prove successful. EEG examinations performed on 10 different occasions showed a severe, diffuse dysrhythmia; hyperventilation readily produced bursts of 3 cps high amplitude waves in series ("paroxysmal cerebral dysrhythmia").

**CASE 4.**—A. W., a 22-year-old girl, gives a history of petit mal attacks beginning at the age of 15 and recurring several times weekly. Although neither the patient nor the family can definitely recollect, it is stated that the girl developed prominent obsessional thinking and compulsive activity a few months before the onset of the petit mal attacks.

The family history, so far as grandparents, parents and siblings are concerned, was essentially negative for psychopathy, epilepsy or neurological disorder. In the collateral line a maternal cousin, who is a year younger than the patient, was said to have developed a convulsive disorder at the age of 19 and which cleared up completely after six months treatment by a physician. This cousin has not exhibited any further attacks of any kind.

The personal history of the patient was not particularly indicative of any marked difficulties. She was a welcome child; birth was normal and spontaneous. She was a rather happy child, and the youngest of four children in the family. She did well in school; her scholastic standing was high and she had many friends. However, she was considered to be rather "nervous and jittery" and in her early adolescence exhibited frequent periods of marked irritability, particularly directed towards her two older sisters. A history of masturbation or of sexual indulgences could not be obtained. At the age of 15 she developed her first seizure.

A few months prior to the first attack she developed ideas revolving about pregnancy fears, although she denies any contact with the opposite sex. She states that whenever she stands close to a man she experiences the fear that she might become pregnant from this individual. She realizes, however, that biologically this is impossible, but nevertheless the idea persists and revolves in her mind. In order to combat this fear it would be necessary for her to repeat certain phrases frequently as, for instance, "God forbid it." Shortly after these fears occurred the patient developed ideas of death in-

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volving her mother, other members of the family and friends of the family. She counteracted such thoughts by constantly repeating such phrases as, "God knows I don't mean any harm to anyone." In addition the patient developed many other fears revolving about pointed objects, needles and in fact

phenomena, maintains excellent contact with her environment and has good insight into her condition. She is very much concerned over her obsessive compulsive activity and over her attacks. A typical seizure is initiated by a scream from the patient who attempts to lie down or lean against something

## SUMMARY OF CASES

| Patient | Age | Sex | Prominent obsessive compulsive features                                            | Family history of psychopathy* | Electroencephalogram |
|---------|-----|-----|------------------------------------------------------------------------------------|--------------------------------|----------------------|
| V. A.   | 19  | M   | Rituals, counting, word repetition                                                 | +                              | Abnormal             |
| A. B.   | 39  | F   | Obscene and profane ideas, utters word "check" to counteract these                 | ++                             | Normal               |
| H. B.   | 40  | M   | Questioning mania                                                                  | Neg.                           | Borderline           |
| J. B.   | 14  | M   | Ritualistic behavior in bathroom and at dinner table                               | Neg.                           | Abnormal             |
| O. B.   | 32  | M   | Cynophobia, claustrophobia, agoraphobia, washing compulsion                        | Neg.                           | Normal               |
| A. Br.  | 17  | M   | Washing compulsion, mysophobia, rituals, doubting                                  | Neg.                           | Abnormal             |
| S. F.   | 33  | F   | Impulse to kill, phobic avoidance of sharp instruments                             | ++++                           | Normal               |
| B. G.   | 40  | F   | Fear of uttering obscenities                                                       | ++                             | Abnormal             |
| I. G.   | 17  | F   | Questioning mania                                                                  | Neg.                           | Normal               |
| L. G.   | 14½ | F   | Perfectionism, constant repetition, doing and undoing, various tics                | +                              | Abnormal             |
| H. G.   | 42  | F   | Obscene and profane ideas, fear of pregnancy                                       | Neg.                           | Abnormal             |
| J. H.   | 25  | M   | Mysophobia, syphilophobia                                                          | Neg.                           | Abnormal             |
| G. H.   | 18  | F   | Washing compulsion, constant repetition, doing and undoing, arm and head movements | +++                            | Abnormal             |
| B. J.   | 36  | F   | Perfectionism, constant repetition, compulsive cleanliness                         | Neg.                           | Abnormal             |
| R. K.   | 20  | F   | Tic-like movements                                                                 | +                              | Abnormal             |
| R. L.   | 12  | M   | Tic-like movements, nosophobia, mysophobia, counting, touching                     | Neg.                           | Abnormal             |
| S. L.   | 13½ | F   | Questioning mania                                                                  | Neg.                           | Abnormal             |
| E. L.   | 25  | F   | Impulse to kill, phobic avoidance of sharp instruments                             | Neg.                           | Abnormal             |
| G. M.   | 42  | F   | Obsessive doubting and indecision                                                  | Neg.                           | Normal               |
| A. M.   | 40  | F   | Impulse to kill, phobic avoidance of sharp instruments                             | Neg.                           | Normal               |
| E. R.   | 17  | M   | Mysophobia, washing compulsion, counting                                           | Neg.                           | Abnormal             |
| N. S.   | 27  | M   | Trichotillomania, fear of perceiving motion                                        | Neg.                           | Abnormal             |
| M. S.   | 28  | F   | Syphilophobia                                                                      | +                              | Abnormal             |
| I. S.   | 18  | M   | Washing compulsion                                                                 | Neg.                           | Normal               |
| P. S.   | 14  | M   | Rituals, hand washing compulsion                                                   | Neg.                           | Normal               |
| V. S.   | 17  | M   | Handwashing compulsion, excessive neatness                                         | +                              | Normal               |
| I. St.  | 13  | M   | Handwashing compulsion, touching, counting                                         | Neg.                           | Abnormal             |
| A. W.   | 21  | F   | Repetition of phrases, obsessive thinking about pregnancy                          | ++                             | Abnormal             |
| S. W.   | 22  | M   | Perfectionism, acrophobia, lysophobia                                              | Neg.                           | Abnormal             |
| E. W.   | 18  | F   | Impulse to kill, phobic avoidance of sharp instruments, agoraphobia, nosophobia    | ++++                           | Abnormal             |
| M. W.   | 26  | M   | Compulsion to pick up paper and examine                                            | Neg.                           | Borderline           |

\* Code:

+—in collateral blood relatives.  
 ++—in one parent or one sibling.  
 +++—in more than one member of immediate family.  
 ++++—in combination of immediate family and collateral line.

has been unable to sew or knit because of these fears.

Because of her clinical state the patient was unable to attend school after the age of 16 and has remained practically confined to her home. However, she is happy to go out with any member of her family and frequently urges them to take her places because of her fear of going out alone. The patient is not delusional, shows no hallucinatory

since she becomes aware of an impending attack. She then becomes unaware of her surroundings for about 30 seconds, and salivates during this period. At times she shows a few facial twitches and usually attempts to tear off her clothes during this period. After this subsides she is confused, for about another 30 seconds, and then regains full awareness and realizes that she has had an attack of some kind.

Anti-convulsant therapy consisting of large doses of dilantin and phenobarbital, and at times benzedrine, has been of only partial value in diminishing the incidence of these petit mal-like attacks. Psychotherapy has appeared to be almost equally effective in diminishing the incidence of these attacks but has not been very successful in alleviating her obsessive compulsive activity. With combined pharmacologic and psychologic therapy, the clinical state of the patient has been only mildly improved over a period of two years.

Electroencephalograms taken on six different occasions reveal a pattern chiefly characterized by a completely disorganized and irregular type activity and in addition on two occasions a paroxysmal cerebral dysrhythmia was noted.

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## CORRESPONDENCE

March 21, 1944.

To the Editor,

SIR: In the January, 1944, number of the AMERICAN JOURNAL OF PSYCHIATRY there appears on page 570 a comment on *War Attitudes of Chicago Youths*. The implications of this comment are such as to impel me to make the following statements relative to it.

1. The tone of the comment appears to be one of condemning Chicago youths of high school age for harboring the critical attitudes toward the present war ascribed to them by the study referred to. It seems that such a condemnatory tone is out of place in a scientific journal unless it be directed toward some technical feature of the experimental conduct of the experiment.

2. The attitudes were presumed to be revealed by English themes on the topic: How the War Affects Me. In spite of Sherman's footnote comment to the contrary, there is the serious possibility that the subjects gave the topic a personal interpretation and described the specific and concrete ways in which the war had affected their daily living. That the war has meant considerable personal inconvenience cannot be denied by any of us. However, to interpret these statements of our personal inconveniences as reflecting our basic attitude toward the present war may be to commit a grave injustice. (The same consideration would be true were any other social problem similarly presented.) One needs but to recall his own army life to appreciate the fact that personal grievances do by no means interfere with a vigorous prosecution of the business at hand. In terms of the title of the theme presented it might just as easily be a matter of surprise that any favorable attitudes toward the war were elicited.

3. But if the attitudes of the respondents were properly identified, as the comment presupposes, the problem of evaluating these attitudes still remains. It appears to the

writer that any person not hopelessly naive or unintelligent must be "confused" and "critical" with reference to the ultimate results of the present war. Are Roosevelt and Churchill not confused by Stalin's recognition of Badoglio? Is not the rapid realignment of powers sufficient basis for the development of just such "confused" attitudes? There is a considerable body of literature being published at the present time, *e. g.*, M. J. Adler's *How to Think about War and Peace* and E. H. Carr's *Conditions of Peace*, literature written by men whose patriotism cannot be questioned in spite of the critical attitudes their writings express. This literature may not be read by the majority of youths of high school age but precipitations from it may be present in the literature they do read.

4. At the opposite extreme are the favorable or strongly favorable attitudes toward the war. What evaluation should be given these? A scientist would be constrained to ask the question: Has it been scientifically demonstrated that the presence of such attitudes is the best guarantee of winning the war and the peace to come? Of the critical attitudes he should ask: Has it been scientifically demonstrated that a critical attitude is one least designed to win the war and the peace? Assuming that the peace to follow is a major interest to all, might it not be that a strongly favorable attitude toward the war, especially if accompanied by a vindictive spirit toward the vanquished, would be a major obstacle to the establishment of permanent world peace? On the other hand would not a critical attitude toward the value of war as a means of settling issues be the best augury for an adequate peace plan?

5. Is it not, after all, a healthy sign that approximately 50% of our high school youths are taking a critical and reflective attitude toward what is by common consent a major social issue of today? Is this not indicative of the fact that the democratic ideal is working?

6. As to locating responsibility for these attitudes no single source can be named, as the comment implies. The fact is that there is probably a "newspaper in the gothic tower" for each of us as well as other literature and the ubiquitous radio that play their roles in the molding of our attitudes. On the other hand many of the parents of these high school youths participated in the War of 1914-18. Can we assess the influence of the parental attitudes formed during the past 20

years since that conflict on the attitudes and beliefs of their children?

Cordially yours,

R. H. WATERS,  
*Prof. Psychol.,  
Univ. of Arkansas*

P. S. It should be obvious that the above remarks are, as is the comment to which they are directed, argumentative rather than scientific in character.

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## COMMENT

### DEVELOPMENTS IN PSYCHIATRY IN GREAT BRITAIN

In response to our request, Dr. R. D. Gillespie, psychiatrist to Guy's Hospital, London, has prepared the subjoined review of noteworthy current developments in psychiatry in Great Britain. These activities, involving agency reorganization already accomplished and further undertakings looking toward the long future, are of particular interest to American psychiatrists at this

time when post-war planning is receiving serious consideration.

Dr. Gillespie's observations on medical education, especially the graduate curriculum leading to the degree D. P. M., and his comment on the position of psychology point to new orientations that will be followed with close attention by the western neighbors.

Dr. Gillespie's text follows:

#### SUMMARY OF CURRENT DEVELOPMENTS IN PSYCHIATRY IN GREAT BRITAIN

The amount of activity throughout the field of mental health continues to be remarkable. It is certain that there has never been a period in this country in which there have been so many committees sitting simultaneously considering possible improvements in the mental health service. It is not that the activity has been confined to speculative planning; various notable improvements have been put into effect.

A provisional amalgamation of the Central Association for Mental Welfare—which previously dealt almost entirely with defectives but alone of the three bodies had a government subsidy—the National Council for Mental Health, and the Child Guidance Council, took place in January 1943. This amalgamation had been recommended by the Faversham Committee, which issued its report before the war. New offices have been obtained for the joint organization, which has already begun to justify itself. It enjoys more prestige than any of the constituent bodies by themselves could command, and it has a Treasury grant for part of its work. The Provisional Council is in a position to give practical help, since in addition to its volunteer lecturers it has a paid staff of psychiatric social workers and educational psychologists, and these can be loaned to new clinics and to educational authorities. The psychiatric social workers are distributed regionally throughout the country. The mass evacuation of children in the early part of the war to country districts was the original stimulus for much of this spread of psychiatric social work.

Recently the Provisional Council in collaboration with the Board of Control has undertaken the psychiatric after-care of patients discharged from military hospitals.

Lecture courses to professional groups and especially to matrons and others in charge of residential homes and groups have proved extremely valuable and are likely to be a permanent arrangement. Most such people in charge of groups of children had had no previous instruction of this kind.

In addition to carrying on the work previously done by the Central Association for Mental Welfare in the social care of the feeble minded, the Council is responsible for five emergency homes and four agricultural hostels for the feeble minded. A small percentage of the behaviour problems of the evacuated children proved to be so intractable as to make it desirable to establish a few residential homes for these especially difficult children.

#### EDUCATION

A committee of the Royal College of Physicians has been at work for a considerable time on the future psychiatric education of the medical student and of the graduate. It has issued an interim report on students' education in which it is recommended that a course in psychology should be taken in the pre-clinical years, that the clinical instruction in psychiatry should extend throughout the general clinical period, that is at least three years out of the five, and that besides clinical clerkships and out-patient departments the student should also hold a short residential appointment in a mental hospital or in an observation ward for recent cases in a municipal hospital.

The graduate curriculum is also under consideration. It has long been felt that the existing D.P.M. is very unsatisfactory; its requirements are certainly not exacting, although to get the standard raised before the war proved a difficult task, partly because the facilities for training, especially for students coming from abroad, were extremely restricted. The requirements envisaged however in the mental health services generally should make possible a more prolonged and far more satisfactory curriculum of graduate instruction. The proposals of the committee, when they do appear, seem likely to bear a close resemblance to the requirements of the American Board of Psychiatry and Neurology.

The shape of things to come in this way can be deciphered from the report of the Langdon-Brown Committee, which as an independent committee pub-

lished its conclusions last year. This report envisaged four years as the minimum time after graduation in which a diploma in psychological medicine could be obtained.

Any attempt to introduce more psychology into the graduate curriculum is handicapped by the relatively small number of psychological laboratories existing in the country. The philosophers dominated this field for so long and so heavily that the deadness of their hand is still felt. In a well-known university, for example, psychology is still discussed under the title "mental philosophy" and woe to the lecturer from whom offence cometh in any presentation savouring too obviously of scientific materialism! This may sound like Tennessee, but it is actually Oxford, England.

The report of the psychological group of the British Medical Association ranges widely and not very precisely over the field of mental health. This is only to be expected perhaps with a large and rather miscellaneous committee, meeting hurriedly in order to be able to present an outline of desirable developments under the pressure of time available before the Government might produce a report on the health services as a whole. The report by the psychological medicine group of the B.M.A. bears the stamp of service experience since it emphasizes the possibility of psychiatric selection for vocations and professions. In this perhaps it goes beyond what the country as a whole will accept, except on an optional basis as far as the individual is concerned. It may be that it goes beyond the justification afforded by the data, promising as it appears, which we at present possess. The increasing interest of psychiatrists in people in the mass, derived again from service experience, is shown in the recommendations for psychiatric participation in solving industrial problems of fatigue, accidents, general welfare and the like.

A war-time imprint, less welcome to many and probably out of step with the feeling and tradition of the community as a whole, is the suggestion of a kind of hierarchy of medical officers of mental health covering the various regions of the country and working under a mental health department. The report however subsequently disclaims any implicit advocacy of a State Mental Health Service.

A draft report has also been circulated, but in this case for restricted consumption, by the Royal Medical Psychological Association, again in anticipation of impending legislation and because of the need that was felt to inform the legislators of the views of the Association which consists preponderantly of medical officers of mental hospitals, and which is led by the superintendents of these hospitals.

Both the B.M.A. report and the R.M.P.A. one exhibit, inevitably, an uneasy compromise of past with present, but in the R.M.P.A. report the influence of the past is more evident. Both reports recommend changing the name of the Board of Control to the Board of Mental Health, and the creation of regional medical officers in mental health. A concession to the democratic viewpoint is made in the suggestion that there should be a

medical board set up in each mental hospital, composed of medical officers with the medical superintendent as chairman. It is made very clear however that the medical superintendent is to remain an autocrat in his own institution. This rather emphatic recommendation is likely to be regarded as reactionary in some quarters. A number of younger men wish to see the organisation of mental hospitals conform to that of voluntary hospitals, the medical superintendent being confined to administrative duties and acting as liaison officer between the medical staff of the hospital and the governing body.

The R.M.P.A. is converted to the introduction of psychiatric clinics or units in general hospitals, in imitation of what has so long existed in U.S.A. and on the continent of Europe. The only example so far existing in England is the York Clinic, at Guy's Hospital—projected before the war, built during it, but serving at present emergency purposes of other kinds.

The inauguration of bursaries in psychological nursing with special reference to the nursing of psychoneurotic and the milder psychotic conditions is a new departure in this country. These bursaries have been provided by Sir Felix Cassel, brother of the founder of the Cassel Hospital, which the late Dr. T. A. Ross of "The Common Neuroses" made famous. No formal instruction in this type of illness had previously existed here. The new course of instruction consists of lectures in psychology, sociology, social case history taking, occupational therapy and psychological nursing.

The example of the services in providing special hospitals for rehabilitation, not only of psychoneurotic and psychopathic patients, but of orthopaedic, neurological and general surgical defects following injury, has shown up by contrast the dearth of such provisions for the civilian worker, who even in war-time has not been provided for in this way unless he is in one of the Civil Defence Services, when he is accommodated in one of the hospitals of the Emergency Medical Service. A group of industrialists on the advice of Lord Horder and Dr. Ling have provided the funds to open a rehabilitation centre in the country at Roffey Park in Sussex for debilitated munition workers and the like. The emphasis is to be on self-help; the patients are to run their own domestic services as far as possible—occupation, instruction, exercise and adult education. The trend is away from the basket-making type of occupational therapy to the production of useful articles with the appropriate tools and small machinery installed in the premises. The idea is to rehabilitate the man or woman at his own job if possible, or in something akin to it. As many of the patients treated will be of the psychoneurotic type the experiment has obvious psychiatric interest. No such hospital has existed hitherto for the working class, and it may yet be multiplied throughout the country. The influence of the Tomlinson report on rehabilitation and its effect in stimulating the appropriate legislation may enable the funds to be provided.

The Beveridge plan for unemployment insurance has stimulated the R.M.P.A., in another report, to



study the problem of workers' compensation. The position with regard to workmen's compensation in Britain has long been most unsatisfactory. Sir Arnold Wilson and Professor Herman Levy pointed out in an exhaustive study some years ago that existing legislation was a positive hindrance to a workman's recovery; it not only made no positive provision for his restoration to health, but if it did anything it hastened his return before he was fit. The R.M.P.A. recommend that a substantial allowance should be provided and that machinery should be set up to enable the disabled individual to be reinstated in industry as rapidly as possible. The committee adopted the view that it is insecurity, for example in the shape of uncertain employment or inadequate benefit, that produces malingering. It is not safeguards against malingering, but medical and psychiatric help that is required. The committee take the view that it is to

the interest to the community to provide, not as little, but as much as it can offer, to those who are willing to play their part in it.

The war continues to be a remarkable stimulus to social thinking in Britain. It has awakened the national conscience, never very drowsy, and has given everyone a livelier sense of belonging to a closely knit community and a vivid reminder that "we are all members one of another." Legislation can hardly keep pace with the numerous reports outlining social reforms. On the other hand the publication of such reports is stimulated by legislation, accomplished or projected, and the psychiatrist, as has been indicated, has not lagged in the general productivity. It is pleasant to find so much energy under the traditionally phlegmatic exterior and so much dilution of individual self-interest with genuine idealism.

### DOCTOR POLLOCK AND MENTAL HYGIENE

One had come to think of Dr. Horatio M. Pollock as an inseparable part of the Department of Mental Hygiene at Albany. He had been there a long time, thirty-two years, to be exact, the span almost of a human generation; and his services were of such character that one can understand the regret with which the Department announced his retirement on December 31, 1943.

Two days earlier the headquarters staff gave a testimonial dinner in Dr. Pollock's honor, at which warmest appreciation of his professional achievements, public services and human qualities was expressed by associates and friends who were present and by many others from afar by letter or telegram. The very bulk and sincerity of these tributes, merely as grateful recording of work done during a unique career, must have warmed the heart of the guest of honor and made him more aware than ever perhaps of the abiding esteem and affection of his colleagues. As a perpetual reminder a watch was presented to him by Commissioner Frederick MacCurdy on behalf of his associates in the Department.

To mark in another way the occasion of Dr. Pollock's severing his active connection with the Department of Mental Hygiene, the *Psychiatric Quarterly Supplement* for January, 1944 was designated the "Horatio Milo Pollock Number" and contained a detailed review of his career, testimonials of "friends and associates from coast to coast" and a fine editorial tribute by Dr. Hutchings.

Perusing this record one is amazed by the ground covered and the number of major undertakings successfully carried through, even considering Dr. Pollock's length of years. It was in 1911 that he embarked upon his principal life work as Director of the Bureau of Statistics of the New York State Department of Mental Hygiene. Up to this time statistics of the mental hospital services were inadequate and unreliable. Complete reorganization was necessary. With an able staff whose distinguishing qualification was personal loyalty to the Chief, "he developed New York State's reports into a dependable, scientific system which has served as a model for statistics on mental disorders, both in this country and abroad." When a little later the American Psychiatric Association and the National Committee for Mental Hygiene undertook the formulation of a standard nomenclature of mental diseases and of a uniform statistical system, since adopted throughout the country, the work involved in this tremendous task, according to Dr. James V. May who represented the American Psychiatric Association on the National Conference on Nomenclature of Disease, was "practically all" done by Dr. Pollock.

On the strength of his statistical organization in New York, he was called by Surgeon-General Gorgas during World War I to inaugurate a system of records and statistics for the new division of neurology and

psychiatry in the United States Army. Shortly after the war the State of Illinois invited him to set up a statistical system for the institutions of that state. He has been for many years statistical consultant to the National Committee for Mental Hygiene and to the Federal Census Bureau. He has had a major part in editing and revising the "Statistical Manuals" for both mental hospitals and institutions for mental defectives. For nearly a quarter of a century he has been chairman of the committee on institutional statistics of the American Statistical Association.

The bare enumeration of Dr. Pollock's professional and social welfare activities is hardly possible in this place. His literary contributions have been numerous and of great value. For twenty years he was the editor of the *Psychiatric Quarterly*, originally the *State Hospital Quarterly*.

One of the treatment methods to which he devoted much thought and energy was extramural care. He was co-author and editor of "Family Care of Mental Patients" (1936), from the publication of which dates the program of expansion of community care and treatment for mental hospital patients in New York State. A recommendation of Dr. Pollock that deserves the widest and most serious consideration in post-war planning is the provision of free psychiatric and social services as needed for mental patients in their own homes.

Besides many contributions to periodic scientific literature Dr. Pollock was co-author with Malzberg and Fuller of "Hereditary

and Environmental Factors in the Causation of Manic-Depressive Psychoses and Dementia Præcox" (1939), and author of "Mental Disease and Social Welfare" (1941).

It is quite unnecessary to say that while Dr. Pollock is America's pioneer and foremost mental health statistician, he is anything but a man merely of records and figures, however enlivening and illuminating he has made them. He is indeed one of the country's leading exponents and practitioners of mental hygiene in the broadest and best sense. In his own personality he embodies the very spirit of mental hygiene.

His prestige in a wide field is indicated in part by the offices he has held—president of the American Association on Mental Deficiency, vice-president of the American Statistical Association, president of the Association of State Civil Service Employees, president of the Civic League of Albany. In 1924 the American Psychiatric Association honored itself by making him an honorary member—one of the very few non-medical members (Dr. Pollock is a Ph. D., University of Leipzig). In 1939 he was official delegate from the United States to the Pan-American Neuropsychiatric Congress at Lima, Peru.

The JOURNAL takes pleasure in adding its word of appreciation and homage to those already spoken and written. As one of the most wholesome influences in the domain of mental health and social betterment, may Horatio Pollock's days be many.

#### YALE PLAN CLINICS FOR INEBRIATES

Announcement has been made of the opening of clinics in New Haven and Hartford for the study of the problems of inebriety. The outgrowth of independent planning by the Laboratory of Applied Psychology of Yale University and the Connecticut Prison Association, sponsored and approved by the State Medical Society, these clinics will undertake an ambitious program of diagnosis and research. Each clinic will have a personnel consisting of psychiatrists, a psychologist, representatives of Alcoholics Anonymous and the Salvation Army, a

social worker and a clerical assistant. It is proposed to accept directly cases applying for help, as well as those referred by social agencies, courts and individual physicians. The clinics will have no therapeutic facilities themselves but will refer clients to outside physicians or to the proper agency in the community.

In addition to their diagnostic functions it is expected that the clinics will serve as training grounds for psychiatrists, psychologists, social workers and others especially interested in this field of medicine, and that

they will build up research material which may be used in the further study of the problems of the inebriate.

Dr. Howard W. Haggard, director of the Yale Laboratory of Applied Physiology, and Dr. E. M. Jellinek, Sc. D., director of the School of Alcoholic Studies, are in charge of the program. A periodic résumé of the results will be issued.

Obvious questions which will arise are the definition of the line of demarkation between "guidance" and "treatment," and the extent to which medical problems may be turned over to lay agencies for solution. The attempt to find the answers to these and the many other perplexing questions connected with alcohol addiction should commend these clinics to the interest of psychiatrists.

## NEWS AND NOTES

**DR. BARRERA HEADS DEPARTMENT OF PSYCHIATRY AND NEUROLOGY AT ALBANY.**—The Albany Medical College and the Albany Hospital announce the appointment as of January 1, 1944 of Dr. S. Eugene Barrera as professor of neurology and psychiatry and neurologist and psychiatrist-in-chief. The professorship of neurology and psychiatry carries with it the directorship of the Department of Neurology and Psychiatry and of Mosher Memorial which is the psychiatric unit within the department. Dr. Barrera was formerly principal research psychiatrist of the N. Y. State Psychiatric Institute and Hospital and also assistant professor of psychiatry of the College of Physicians and Surgeons, Columbia University. In the new appointment he succeeds Dr. D. Ewen Cameron who becomes professor of psychiatry at McGill University, Montreal, Canada. Dr. Barrera is well known as a teacher and investigator and as the author and co-author of numerous papers on neurological and psychiatric subjects.

**SYMPOSIUM OF JUVENILE DELINQUENCY.**—The Michigan Society of Neurology and Psychiatry held a symposium on the subject of "Juvenile Delinquency" in Detroit on March 16, 1944. The following members participated:—Dr. Raymond W. Waggoner, Ann Arbor: Infant, Child, and the War; Dr. Gordon R. Brain, Flint: Juvenile Delinquency and Heredity; Dr. Robert H. Haskell, Northville: Racial Factors in Juvenile Delinquency; Dr. John M. Dorsey, Detroit: Juvenile Delinquency and the Home; Dr.

Leo H. Bartemeier, Detroit: The Psychology of the Infant; Dr. Russell Costello, Detroit: Juvenile Delinquency and the Pediatrician; Dr. Harry J. Baker, Detroit: Juvenile Delinquency and the School; Dr. Ray H. Morter, Kalamazoo: Juvenile Delinquency and the Church; Lt. Col. Roscoe W. Cavell, M. C., Detroit: Juvenile Delinquency and Neighborhood Influences; Dr. Thomas K. Gruber, Eloise: Juvenile Delinquency and the Radio, the Movies, and the Newspaper; Dr. Perry C. Robertson, Ionia: The Juvenile Criminal; Dr. Lowell S. Selling, Detroit: The Juvenile and the Law; Dr. O. R. Yoder, Ypsilanti: The Psychopathic Juvenile and the State Hospital; Dr. Ralph M. Patterson, Ann Arbor: Michigan Institutional Needs for Juvenile Delinquents; Dr. A. C. LaBine, Detroit: Juvenile Delinquency and the Ford Republic; Dr. Frank F. Tallman, Lansing: Child Guidance Agencies and Juvenile Delinquency; Dr. Thomas J. Heldt, Detroit: Dynamic Causes in Juvenile Delinquency.

**STERILIZATION IN CALIFORNIA.**—The following figures are taken from the Statistical Report of the Department of Institutions of the State of California for the year ending June 30, 1943. They show the number of operations in state institutions during 1942-43 (15 per cent fewer than in 1941-42), also the cumulative totals of the many years during which this procedure has been carried out. Of the patients sterilized during 1942-43, 46 per cent were men and 54 per cent were women.

STERILIZATION OPERATIONS PERFORMED IN CALIFORNIA STATE HOSPITALS AND INSTITUTIONS FOR MENTAL DEFECTIVES TO 1943

|                                             | Year ending June 30, 1943 |        |       | Cumulative totals through June 30, 1943 |        |        |
|---------------------------------------------|---------------------------|--------|-------|-----------------------------------------|--------|--------|
|                                             | Male                      | Female | Total | Male                                    | Female | Total  |
| Mental hospitals (7).....                   | 105                       | 144    | 249   | 5,702                                   | 4,763  | 10,465 |
| Institutions for mental defectives (2)..... | 139                       | 146    | 285   | 2,524                                   | 3,131  | 5,655  |
| Totals .....                                | 244                       | 290    | 534   | 8,226                                   | 7,894  | 16,120 |



**ROCKEFELLER FOUNDATION APPROPRIATIONS IN 1943.**—The report of President Raymond B. Fosdick of the work of the Foundation in 1943 indicates that of funds available for appropriations in the amount of \$12,135,909, appropriations were made during the year to the amount of \$7,760,186.

This sum was broken down as follows: public health, \$2,450,000; medical sciences, \$1,529,040; natural sciences, \$599,150; social sciences, \$1,068,130; humanities, \$1,055,410; general, \$189,800.

Under medical sciences grants were as follows: psychiatry, neurology and allied subjects, \$578,140; endocrinology, \$56,400; medical education, \$495,000; group medicine and medical economics, \$189,500; fellowships and grants in aid, \$210,000.

**THE COMMONWEALTH FUND AND MENTAL HEALTH.**—In his annual report for 1943, General Director Barry C. Smith comments:

"If psychiatry is that branch of medicine which attempts to deal with the springs of human behavior, one might expect to find the psychiatrist recognized as indispensable in war time when, in the interests of national security, individual endeavor must be brought to full harvest. The facts, however, do not quite fit this picture. The psychiatrist would not claim to know more than a little about husbanding and releasing human energy and what he does know is often disregarded by 'practical' people, both in and out of uniform. Even in the relatively limited task of assaying human material he is likely to be forgotten. Earlier and more systematic use of psychiatric judgment in the selection of men for the army would not, of course, have changed the distribution of the fit and unfit in the population of military age. But it would certainly have reduced the number of misfits taken into the army, and saved many from the needless hardship of being snatched away from whatever adjustment they had been able to make for themselves, sent off to a camp for training or even admitted to active service, and then set adrift with the stigma of inferiority. It is estimated that from 20,000 to 40,000 such men are turning up in New York City alone this year, in addition to 60,000 or 70,000 rejected initially by draft or induction boards for similar reasons. These men and others like them throughout the country will have no such entrée to public attention and sympathy as those who come back to civilian life with battle injuries, but they are no less in need of prompt and skilful help. The New York City Committee on Mental Hygiene is making a systematic study of this problem in the metropolitan area. With aid from the Fund, it has already begun collecting

information about a thousand of these men in the hope of learning how to fit them, so far as may be possible, into the community. A plan of action backed by ample data may offer guidance for public policy; the problem as a whole is obviously too big to be met by private effort.

"Meanwhile, on a more intimate scale, and also with aid from the Fund, a special service has been set up at the Payne Whitney Clinic of the New York Hospital. Here a few men, chiefly those discharged for psychiatric reasons after induction, are being interviewed and treated by a small staff with much volunteer help. This experiment in therapy should also have value in setting the pace for similar efforts elsewhere."

Appropriations to the amount of \$163,284.85 were voted in 1942-1943 to provide aid to educational and service activities in the United States and England.

**THE A. CRESSY MORRISON PRIZE CONTEST FOR 1944.**—The New York Academy of Sciences announces two prizes of \$200 each, offered by Mr. A. Cressy Morrison, to be awarded at the annual dinner, December, 1944, for the two most acceptable papers in a field of science covered by the Academy or an Affiliated Society.

**Conditions:** Authors and coauthors shall be members in good standing of The New York Academy of Sciences or one of the Affiliated Societies, prior to submission of the manuscript.

Papers are to be submitted on or prior to October 1, 1944, to the Executive Secretary of The New York Academy of Sciences. They must embody the results of original research not previously published; must be accompanied by a summary of the data presented and conclusions reached, and be ready for publication as submitted.

The awards shall be made by the Council of The New York Academy of Sciences, if, in the opinion of the judges, a paper worthy of a prize is offered.

The Academy shall have first option on the publication of all papers submitted, unless especially arranged for beforehand with the authors, but such publication is not binding on the Academy. Wherever published, the papers awarded the prizes shall be accompanied by the statement: "Awarded an A. Cressy Morrison Prize in Natural Science in 1944 by the New York Academy of Sciences."

For further information, address The

New York Academy of Sciences, Central Park West at 79th Street, New York, N. Y., Michael Heidelberger, Recording Secretary.

**NATIONAL FOUNDATION FOR INFANTILE PARALYSIS.**—President Basil O'Connor in the fifth annual report of the Foundation recently published, relates the vast activities of the Foundation during the nation's third worst epidemic of poliomyelitis, that of 1943.

During the fiscal year ending September 30, 1943, the National Foundation made grants and appropriations totaling \$1,278,836.04 in five main categories: virus research, after-effects research, education, medical publications, and epidemics and public health.

**SOCIALIZED MEDICINE.**—The American Bar Association reporting on the socialized medicine bill (S.1161) relating to the federal regulation of medicine, concludes as follows:

The American Bar Association is limited to an expression of opinion and judgment with respect to those fields which relate to the administration of justice and which directly affect the safeguards and protection of the rights and liberties of the citizens of this country. Under normal circumstances, therefore, it is not the function of this association to attempt to influence substantive legislation by the Congress of the United States. But when under the pretext of the general welfare legislation is proposed in Congress which either inadvertently or with deliberate subtlety constitutes a direct attack on the rights and liberties of the citizens of this country, it becomes the duty of this association actively to voice its objections, a summary of which is as follows:

1. Local self government must be preserved in our federal system. State governments directly responsible to the will of the people are best adapted to exercise such supervisory control as may be instituted over the health and medical care of our citizens.

2. S. 1161 seeks to invest in the Surgeon General, who is not an elected servant of the people and who is not amenable to their will, the power arbitrarily to make rules and regulations having the force and effect of law which directly affect every home.

3. The measure furnishes the instrumentality by which physicians for their practice, hospitals for their continued existence the citizens for their health and that of their families can be made to serve the purposes of a federal agency.

4. The bill fails to safeguard the rights of patients, citizens, hospitals or doctors with respect to disputes arising or rights denied through the arbitrary or capricious action of one man.

5. The bill fails to provide for any appeal to any court from the action of the Surgeon General.

6. The vicious system whereby administrative officials judge without court review the actions of their subordinates in carrying out orders issued to them is extended in this bill to a point foreign to our system of government and incompatible with the adequate protection of the liberties of the people.

The Constitution of the United States is designed to protect the citizens of this republic in the exercise of the rights of free men. The provisions of that instrument can be rendered impotent when our citizens, for the sake of an apparent immediate benefit, surrender to their government such direct control over their lives that government, by imposing a constant fear on them of having those benefits withheld or withdrawn, can compel from them obedience and subservience to its dictates. (J.A. M.A. March 11, 1944.)

**THOMAS W. SALMON LECTURES, 1944.**—Dr. C. C. Burlingame, chairman of the Salmon Committee announces that the annual series of lectures for 1944 will be delivered in November at the New York Academy of Medicine by Brigadier John R. Rees, consultant psychiatrist to the British Army. His subject will be "The Shaping of Psychiatry by War."

It will be recalled that Brigadier Rees visited the United States and Canada last year and spoke in a number of cities on his experience in military psychiatry during Britain's four years of war.

**ETC. A REVIEW OF GENERAL SEMANTICS.**—Number 1 of this new quarterly review made its appearance in the autumn of 1943. It is the official organ of the Society for General Semantics and is edited by S. I. Hayakawa, with Henry J. Webb (dept. language and literature, Illinois Institute of Technology), assistant editor, and an associate staff consisting of Wendell Johnson (assoc. prof. psychology, State Univ. of Iowa), Raymond W. McNealy (prof. surgery, Northwestern Univ.), Irving J. Lee (U. S. Army). A. Korzybski and M. Kendig are consulting editors.

The Review contains original articles and reprints also outstanding articles of semantic import that have appeared elsewhere. Thus the introductory article is Thorndike's "Science and Values" (*Science*, Jan. 3, 1936), being his presidential address before the A.A.A.S. in St. Louis in December 1935, and a contribution of permanent value. This

first number contains also a provocative paper by Oliver Bloodstein (Signal Corps, U. S. A.) on "General Semantics and Modern Art," which called forth a spirited correspondence in the 2d issue of ETC. A reprint of Korzybski's "The Brotherhood of Doctrines" (*The Builder*, Aug. 1922) also appears in the autumn number. Among important reprinted articles in the winter number are "Mathematics Since 1801" by Eric T. Bell (*The University Review*—Kansas City, Winter, 1942) and "Science, Common Sense and Decency" by Irving Langmuir (*Sci. News Letter*, Jan. 2, 1943).

ETC. presents also book reviews and miscellaneous notes and news items and is a very interesting informative and stimulating publication. Diffusing in this way the principles and achievements of semantics is a worthy and welcome undertaking.

Headquarters of ETC.: Illinois Institute of Technology, 3300 Federal St., Chicago 16, Illinois.

#### FUND FOR PSYCHOSOMATIC RESEARCH.—

The National Committee for Mental Hygiene announces the establishment of a fund for research in psychosomatic medicine. The purpose will be to stimulate and subsidize research in the psychosomatic aspects of the diseases chiefly responsible for disability and death. The fund will be directed by Dr. Edward Weiss. Projects will be considered by the following committee: Dr. Charles M. Aldrich, Dr. Franz Alexander, Dr. Stanley Cobb, Lt. Col. William C. Menninger, Dr. John Romano. The fund will be administered under the direction of Dr. George S. Stevenson, the National Committee for Mental Hygiene.

Communications should be addressed to Dr. Edward Weiss, 269 S. 19th Street, Philadelphia 3, Pa.

#### AMERICAN REVIEW OF SOVIET MEDICINE.

Under the editorship of Professor Henry E. Sigerist, with Dorothy A. Halpern as managing editor, this review published bi-monthly by the American-Soviet Medical Society made its appearance last autumn.

This praise-worthy publication which will bring the best of Soviet medical science to

American readers, is but one of the undertakings of the American-Soviet Medical Society. As Walter Cannon remarks in his Foreword: "The medical profession is the world's greatest fraternity." The central purpose of the Society is to strengthen the bonds that unit the members of that fraternity in the Soviet Union and the United States. In extending greetings from the U.S.S.R., Representative Vladimir V. Lebedenko of the Russian Red Cross, writes: "This publication is a sign that our cooperation will not cease when fascism has been destroyed. It is a promise that our scientific work will not go into isolation but will progress in mutual friendship and combined achievement."

One of the objectives of the Society is a post-war exchange of Soviet and American students and teachers.

In an editorial in the initial number of the *Review*, Professor Sigerist gives an informative survey, "Twenty-five Years of Health Work in the Soviet Union," since the establishment in 1918 of the first People's Commissariat of Public Health. Some of the figures he quotes will indicate the growth of medical facilities in the U.S.S.R. in recent years:

|                                             | 1913    | 1941    |
|---------------------------------------------|---------|---------|
| Total hospital beds (non-psychiatric) ..... | 142,310 | 661,431 |
| Psychiatric hospital beds.....              | 36,240  | 73,992  |
| Maternity hospital beds.....                | 6,824   | 141,873 |
| Tuberculosis dispensaries .....             | 43      | 1,048   |
| Sanatoria and health resorts....            | 2,000   | 132,000 |
| Veneral disease dispensaries ...            | 12      | 1,498   |
| Physicians .....                            | 19,785  | 130,348 |

In addition to translations and abstracts of original articles from Russian publications—at present having to do largely with war medicine and surgery—there is a section of reviews of Russian books. The first issue gives an account of the origin of the American-Soviet Medical Society and prints its constitution. Walter B. Cannon is the first president.

The publication office of the *American Review of Soviet Medicine*, to which business communications should be addressed, is 130 W. 46th St., New York 19, N. Y. The editor's address is 1900 E. Monument St., Baltimore 5, Md.



## BOOK REVIEWS

NERVOUSNESS, INDIGESTION AND PAIN. By *Walter C. Alvarez, M.D.* (New York and London: Paul B. Hoeber, Inc., 1943.)

This volume, which started as a revision of the author's "Nervous Indigestion," became a kind of practical psychiatric treatise written in the vernacular of the internist's office. It records in abundant detail the rich experience of a busy practitioner of internal medicine in dealing with personality disorders as manifested in nervousness, indigestion and pain. Without pedantic fussiness and with a minimum of systematic psychiatric orientation, this personal experience is pointed up in its most direct practical salience for the young medical savant who knows much about disease but little about patients. The author states in his preface, "*the gastro-enterologist just has to be a psychiatrist of sorts,*" and again on page 245 "He may not have wanted to get into this field of medicine, but he cannot stay out of it and be a safe internist."

The psychiatric import of the book must be judged in the light of this intention of the author to call attention to facts, rather than to formulate theory. Nearly half the book is concerned with problems of interviewing—the taking of the history and ways of handling the patient. Here is a rich store of detail, illuminated by a shrewd but sympathetic clinical insight. Some readers may be perturbed by the superabundance of blunt popular terms, such as "crazy," and some psychiatrists will be more genuinely distressed by the rather fatalistic overemphasis on heredity as a determinant of personality disorders. Yet the emphasis on constitution (as in the author's diagnostic category "constitutional inadequacy") is in effect a practically useful means of taking the emphasis off erroneously indicted organs, and placing it on the personality. At any rate, psychiatrists will probably not be concerned primarily to argue with this author about the subtleties of personality development, but will more probably be grateful for the abundance of clinical observations.

For many young physicians this valuable book is full of clinically useful suggestions. It should serve to improve the diagnostic acumen of internists and should stimulate many to study their patients as persons, and to utilize other opportunities to gain more insight into the detailed operation of emotional factors in illness.

J. C. W.

THE HUMAN HAND. By *Charlotte Wolff, M.D.* (New York: Alfred A. Knopf, 1943.)

In this neat, two hundred page volume Dr. Wolff brings forward the hand as an element of perhaps much broader significance for the concept and implications of constitution than has been generally realized. Approaching her task in a very direct, systematic manner, the author reviews the literature, describes the form, structure, and char-

acteristics of the hand in adequate and specific detail and relates data from this level to findings respecting actual personality traits and makeup. These correlations are both striking and extensive, enabling the differentiation of six main hand-personality types with fourteen possible two-type combinations. The book is well illustrated and a clear, comprehensive depiction is given of the procedure worked out by the author for hand examination and interpretation. Also, there is included a helpful series of five case examples and a carefully selected bibliography.

Dr. Wolff is to be congratulated for the well organized and stimulating presentation of a subject definitely meriting further and intensive study, with possibility of really significant results. This book is decidedly worth reading and is strongly recommended to all those, psychiatrists and others, seriously and scientifically interested in human beings and problems of personality.

T. R.

PRINCIPLES OF PSYCHIATRIC NURSING. Second Edition. By *Madeline Elliott Ingram, R.N.* (Philadelphia and London: W. B. Saunders Co., 1944.)

When Miss Ingram's first edition of "Principles of Psychiatric Nursing" appeared in 1939 it presented a different approach to the problems of psychiatric nursing than other textbooks on this subject. The revised edition has been greatly enriched by additional material yet the author has not deviated from her original pattern of presentation. This text contains almost none of the usual terminology of psychiatry and theoretical background with which so many of our nursing textbooks are burdened. It is essentially a clinical teaching course, simple, direct and practical. It is valuable for method as well as content. Out of a wealth of experience, the author has developed a course in bedside nursing in a psychiatric hospital, enlarging the scope to include other situations often encountered by the nurse, such as the procedure to be followed when traveling with a patient. Concurrent with the teaching of the care of patients runs the thread of mental hygiene for the growth and development of the nurse as an individual.

The material is well organized into units which are divided into chapters and these into related paragraphs with headings in bold face or italicized type for emphasis. There are valuable outlines and illustrations as well as student reports and questions for guidance.

With the present emphasis upon clinical teaching, this text meets a great need and will undoubtedly prove extremely valuable, particularly for the less experienced instructor. It is written primarily for undergraduate students beginning in the field of psychiatric nursing.

LAURA W. FITZSIMMONS, R.N.,  
New York, N. Y.



THE FREEDOM TO BE FREE. By *James Marshall*. (New York: John Day Co., 1943.)

This volume is divided into three sections, the final chapter of the first part and the chapters of the last part being reprinted from magazines. It is an ambitious and a sensible book designed to stimulate an interest in the problems of modern democracy. The headings of one of the chapters "Biting Off More Than One Can Chew" might be applied to the book but this is its virtue as well as its defect. It is an effort to see the problem as a whole and such efforts are all too few. The author's assumptions regarding the democratic principle include respect for individuals and variations among individuals, equal opportunity for every individual to obtain satisfaction by realizing and expressing his capacities and pursuing his interests, equality of treatment by those with power or authority, equality as a recognition of differences and an expression of respect of individuality, collaboration rather than competition or paternalism to achieve mutual respect, equality and development.

Unfortunately old shibboleths begin to appear at an early stage. It is assumed that in the Middle Ages society was organized to achieve satisfactions on a more spiritual and personal basis (p. 24). Surely the French revolution suggested something vastly different. Our old friend "the power to distribute lagged more and more behind the capacity to produce" appears again (p. 26). But worse than all "the production line which has made it possible to produce consumer goods enough for the entire population of the world" (p. 32), (also p. 41), surely takes a very narrow view and refers to a small part of the world of the Atlantic. We are not given a clear view of the state although much is said about trends in state planning (p. 31). "Nations like individuals, must be able to forego immediate rewards and spoils for long-term satisfactions. This will be the kernel of genuine reconstruction." This suggests confusion though it is only fair to say that the author attempts to protect himself from the contradictions involved in his approach. International problems are to be solved by education along the lines of functional collaboration. "An education which will be more interested in the psychology and emotions of men than any education we have yet known. The task of such education will be the propagation of democratic faith to free men of paternalism and make possible the acceptance of fraternity" (p. 220). Schools should provide "the mastery of the meaning of those symbols and of that expression which we call culture; the acquisition of competency in those skills which give satisfaction or vocation or both; and the attainment of emotional stability and balance" (p. 267). We may question whether the unfortunate tendencies to seek dominion over others, to quiet anxieties of insufficiency, to preserve dominion over others, to attempt to gain equality, or "to complete the fantasy of an all-powerful father-figure" to confuse equality with identity, to compel identity in others because of an implied threat when it is necessary to measure ourselves against others (p. 268), will disappear

with our ceasing to believe that money makes the world go round.

The author has covered a wide field of reading but he would do well to concentrate further on Chakotin's "Rake of the Masses" and Knight's "Ethics of Competition." The emphasis on the necessity of achieving maturity persists throughout but the author fails to stress sufficiently that the evils of competition are best overcome by working out rules of the game and enforcing those rules rather than changing the game. An enormous burden is imposed on the expert in his *fact finding* and *planning capacity* (p. 120). It is assumed that a labor union can be democratic but there is little evidence of tendencies in that direction. Cooperatives become as aggressive and active as the business man of competitive society. Farmers and labour have become the most efficient of pressure groups. Democracy can scarcely trust the administrator to solve the problem of reconciling conflicting interests. That has been the task of the politician. The development of new vested interests by new groups makes the task of the politician more difficult, and impossible for the administrator with no training in politics. Nevertheless this is a stimulating book concerned with major issues in a broad philosophical sense and the reader who approaches it critically will gain much.

ARNOLD A. INNES, PH. D.,  
University of Toronto.

THE THERAPY OF THE NEUROSES AND PSYCHOSES.  
By *Samuel Herman Kraines*. (Phila.: Lea & Febiger, 1943.)

Books on therapy in psychiatry are rare, and one turns with interest to the second edition of this book first published a few years ago. The author has added chapters on the shock therapies, the organic psychoses and neuropsychiatric states induced by the war. In order to make space for this new material he has deleted chapters on psychoanalysis and related schools, and in this 500-and-some-odd page book there are now only three pages devoted to psychoanalysis.

The author's orientation is obviously psychobiologic and his principles of psychotherapy are along lines of a socio-psychobiologic analysis and resynthesis. Throughout the book there are detailed descriptions of this technique and illustrations with actual case material of its application. As adjuvants, he uses suggestion, hypnosis and medication. Short chapters are devoted to these techniques.

In his approach to the psychoneuroses, the author divides the symptoms into two main groups. The first he calls the tension symptoms, and includes under these general tension symptoms as expressed by anxiety states, worry, irritability, etc., and focal tension symptoms as expressed by gastrointestinal, cardiac, genitourinary disturbances, etc. The second he calls symbolic symptoms, including under these, disturbances expressed in the sphere of sensori-motor activities, special senses and mental processes, such as phobias, obsessions and hysterical conversions. He also lists combinations of these

two groups. There is a rather detailed discussion of the factors at play in producing these symptoms and the psychotherapeutic approach with case illustrations.

The chapter on psychosomatic diseases and their treatment is essentially not different from the discussion of the treatment of the psychoneuroses. The section on the handling of neuropsychiatric states of war is good, if somewhat superficial, and is illustrated with examples of group treatment, especially group hypnosis. The various shock treatments are also described, bringing the material up-to-date and is satisfactory.

The book is quite voluminous and in our opinion rather repetitious. One finds long, flowery paragraphs without which it would have been much more effective. No bibliography or references are provided to which one may turn for further amplification.

Probably the best contribution of this book is that one may obtain a fairly good idea of therapy by utilizing psychobiologic principles.

S. BERNARD WORTIS, M. D.,

JOHN FROSCH, M. D.,

Bellevue Hospital, New York, N. Y.

**PSYCHOLOGY IN NURSING PRACTICE.** By Philip Lawrence Harriman, Ph. D., Lela L. Greenwood, B. A., R. N., and Charles E. Skinner, Ph. D. (New York: The MacMillan Company, 1942.)

This 457 page document comprehensively, yet concisely, covers the anatomy, physiology, psychiatry and general medicine necessary to the understanding of psychology for the nurse in training. Chapters on heredity, embryology, childhood development, sense organs and endocrines give the essential points without tedious detail. Personality types are fully discussed in relation to mental disability as well as to those attributes which make for a successful nurse and a well adjusted person.

Following each chapter there are several questions and exercises which are provocative. Selected references covering each chapter topic provide an excellent bibliography.

One would have liked to see more than a scant page devoted to psychotherapy. Here only one psychotherapeutic method is stressed, namely psychoanalysis, in which the nurse would probably play no part. To one who habitually includes the nurse as a vital factor in general psychotherapy, this would seem an important omission.

"Psychology in Nursing Practice" can be recommended for training school libraries.

MARY V. JACKSON, M. D.,

University of Toronto.

**THE 1943 YEAR BOOK OF NEUROLOGY, PSYCHIATRY AND ENDOCRINOLOGY.** Edited by Hans H. Reese, M. D. (Neurology), Nolan D. C. Lewis, M. D. (Psychiatry) and Elmer L. Sevringhaus, M. D. (Endocrinology). (Chicago: The Year Book Publishers, 1944.)

Dr. Reese looking hopefully to the victorious termination of the present war "sometime during 1945 or 1946," points to the urgency of harmonious

collaboration between organized medical, community and government agencies to meet and solve the massive problems of rehabilitation. "The information from the 16 neurologic centers of the Army General Hospitals will be of great value only if the case material is analyzed and synthesized by teams. Here it may be stated emphatically that the results of these investigations would be enhanced if the Office of the Surgeon General would incorporate experienced civilian specialists in this research program."

The plan and scope of the Year Book remain much the same as in the past years. The literature surveyed is mainly that of the United States and Britain and the British Dominions, with an increasing number of contributions from Hispano-America. European literature has all but disappeared; there are 8 abstracts from Swiss publications, 2 from German (both of 1942). Whatever research work may have been going on in continental Europe, it has not been available for review; and we must await the obsequies of Naziism for the return of science to the paths of peace and the free flow again of civilized thought.

The important place of psychiatry in military medicine is indicated by the 38 pages given over to reviews of psychiatric studies from Army, Navy and Air Force.

In spite of its geographic restrictions the Year Book maintains its tradition of excellence and in these times is especially valuable as a work of reference.

C. B. F.

**A PSYCHIATRIC WORD BOOK.** By Richard H. Hutchings, M. D., D. Sc. 7th Edition. (Utica: The State Hospitals Press, 1943.)

This very useful and convenient pocket-size lexicon made its first appearance in 1930. Its popularity is attested by the fact that the 6th edition (1939) was out of print and continuing demand made the present 7th edition necessary. More than 12,000 copies of the Word Book have been sold.

The present edition has been thoroughly revised, contains about 30 more pages than the last, and includes 150 new terms. While designed primarily for students of medicine and nursing and psychiatric social workers, the Word Book will be found to contain all the terms—doubtless many more—that any one is likely to need who reads psychiatric literature or speaks the language. The format, arrangement and general make-up of the book are excellent.

Perhaps the most baffling words for the uninitiated reader are those relating to psychoanalysis. These the author has designated by the abbreviation *Psa*. Legal terms and those primarily psychological are also indicated by the appropriate abbreviations; likewise those referring to the Rorschach technique.

Among medical lexicons this little Word Book has unquestionably established a place for itself. Having fathered seven editions, Dr. Hutchings now expresses the disposition "to lay aside his pen and leave the future of the lexicon in other hands." Let us hope that he may not be too settled in this purpose.

C. B. F.

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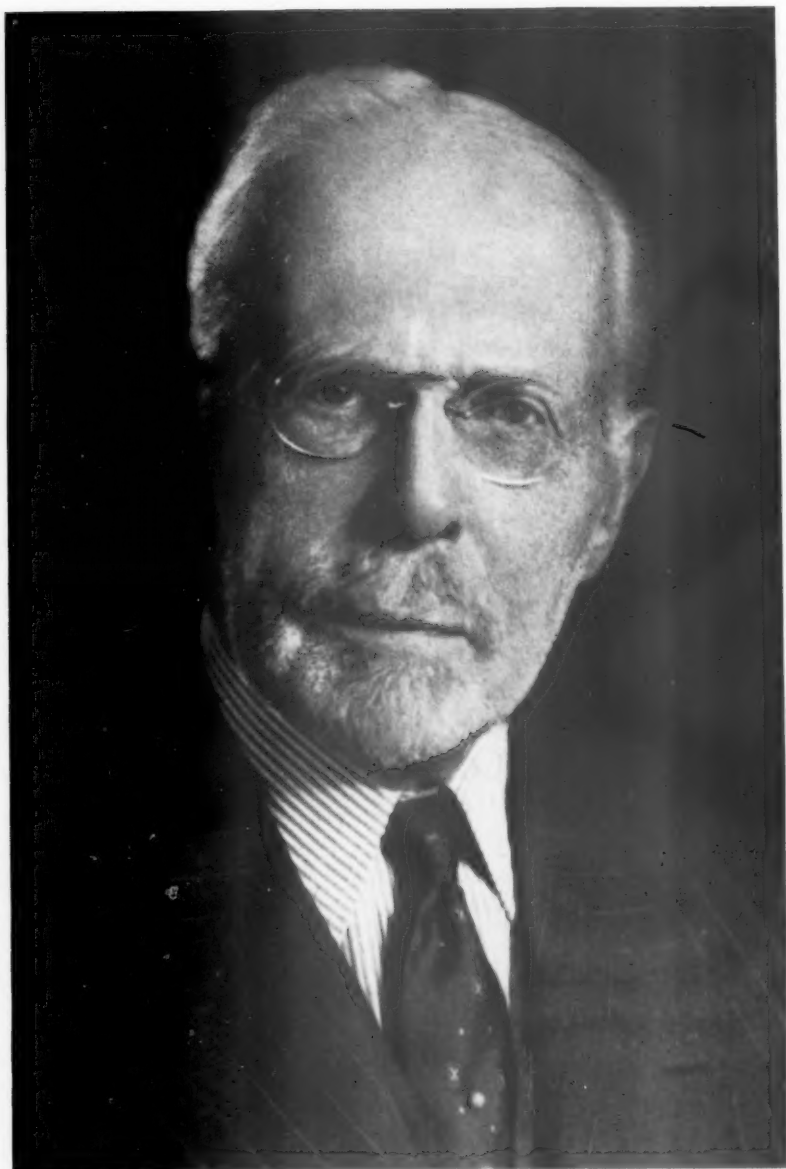
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BERNARD SACHS  
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## IN MEMORIAM

BERNARD SACHS

1858-1944

Bernard Sachs, known to all his intimates as "Barney" saw his 86th birthday on the 2nd of January, 1944, and died, a hard-working, happy optimist on the 8th of February of this year.

In the 3rd week of January I had the great privilege of visiting him for  $\frac{3}{4}$  of an hour during which he showed himself the same keen, steady champion of his ideas whom I had known for more than 30 years.

It is true that age hardly touched him at all. He had zest for every hour of every day. He had freshness, humour and strength.

When Sachs was born in Baltimore in '58, Lincoln had just been elected to the Senate.

When he entered medical school at Strasbourg in '78, Johns Hopkins, Cornell and New York University Medical Schools had not occurred and Columbia and Harvard Medical Schools were in their early youth. The New York Neurological Society was only six years old.

He wrote on the "use of the galvanometer" in '82; on "tumours of the spinal cord" and on "arrested cerebral development with special reference to its cortical pathology" in '86.

More than 50 years ago, Sachs wrote his book on "Mental and Nervous Diseases of Children."

In 1888 he was professor of nervous and mental diseases at the New York Polyclinic and he was president of the American Neurological Association at the age of 36 and again when he was 74.

He was unanimously chosen by the delegates of many nations to be the president of the First International Neurological Congress held in Berne in '31 and two years later he was president of the New York Academy of Medicine.

Throughout his life he did continuous, important neurological work, in Bellevue Hospital, at the Montifiore Home, and at Mt. Sinai he organized the first neurological service in a general hospital in New York.

When he was 29, he described, as did a British ophthalmologist, Tay, independently, the disease now known as Tay-Sachs Disease—amaurotic family idiocy.

It was no accident that his attention was devoted particularly to the young, for his father and his brother Julius Sachs were great teachers.

One of the latest interests in his life was the management of the Friedsam Foundation for Research in Nervous Disorders of Childhood.

He was a prolific writer—a bibliography of 194 titles reveals the range of his interests and intellect.

With sure instinct he resisted separation of study of the mind from study of the body. He felt neurology and psychiatry were opposite sides of the same medal, and that both could only be understood by one knowing medicine, fortified by philosophical interest.

He had a gift for friendship, he was never careless of a friend, and he had a gift for kindness, knowing that to serve one's fellows, to do good to one's friends, are the real fountains of personal happiness.

One friend, Benjamin Altman, played an important part in his life in that he was concerned and was consulted in almost every purchase of a great picture or great porcelain that Altman made. The exquisite collection, now an ornament of the Metropolitan Museum of Art in New York, was the result of these deliberations in the company of experts and by it, Sachs became almost an authority on classic art and porcelains.

He was devoted to the activities of the Charaka Club, a little group of doctors meeting together for a few dinners each winter, not to talk medicine, but to display their hobbies and their intellectual harmonious interests. In this company Bernard Sachs pulled as good an oar as any and always added his note of happy friendship.

I have heard that he climbed mountains in Switzerland, but I never talked to him of this. I understand that, in younger days, every years he pitted himself against the heights. Later, he tried golf, but decided that it was not a game, but a lesson in humility.

When the Wassermann test was reported he went himself to Wassermann's laboratory and learned the method of the test. How many of us have done that?

He believed in life, and his own gift of character gave him no reason whatever to distrust it.

His great gifts were energy, optimism, inner goodness and hard work.

His personality was a dominate example to all who knew him.

When he objected, he did so with courage and directness.

He was alien to the oblique attack, and regarded psychoanalysis as a flank movement to be resisted.

He was a good citizen of his city; his chief public mourner, when he died, was the Mayor of New York, who told of the many lessons he had received from Dr. Sachs on matters of public medicine in the town.

He never lost friendship with the young, and the young loved him.

He never confused the symbol of a thing with the thing itself—never mistook shadow for substance—never mistook the letter for the spirit.

His clarity of mind was a lovely contrast to much surrounding murk.

He knew what he thought, he said what he thought and he meant what he said.

He belonged to the great period of the making of neurology and he was still among the builders long after the foundations had been laid.

His has been a great life.

FOSTER KENNEDY, M. D.

# ANNUAL INDEX

This periodical is indexed alphabetically under both Subject (Part 1) and Author (Part 2) entries. In searching for a specific article the Author entry should be consulted if the name of the author is known since the complete bibliographic reference is to be found after the author's name only. When there are two or more authors for an article the complete entry as shown appears only under the name of the first author. Under the name of each of the joint authors a cross reference is made to the original author entry.

The titles under the subject entries are often inverted or shortened. The Subject index covers original articles, biographic material, book reviews, obituaries, editorial comments and news items.

R. indicates a book review; the title of the book is followed by the author's name, and is also listed by author under Book Reviews. Ed. indicates an editorial comment or news item. Illust. indicates an illustration.

The pages of the special Centenary number do not run consecutively with the adjoining numbers. (Cent.) before a page number indicates the article is in the Centenary issue.

Memorial notices appear under the heading Obituaries and under the names of individuals.

Entries concerning all meetings of scientific bodies will be listed under Association meetings.

## SUBJECT INDEX

### PART 1

#### A

##### Accidents:

Casualties in Institutions in Massachusetts; Walter W. Jetter, and Rollin V. Hadley, 506, Jan. '44.

##### Administration:

###### Government:

New York Story (Ed.), 143, July '43.

Neuropsychiatry in a General Hospital; Thomas J. Heldt, 817, May '44.

Review of Psychiatric Progress, 1943; Winfred Overholser, and Joseph Wortis, 560, Jan. '44.

Air Force: See also Army Air Force, Aviation Psychiatry, Military Psychiatry, Navy Air Force.

Psychoneuroses Incidental to Pilot Training; Walter O. Klingman, 217, Sept. '43.

##### Alcohol:

*Effects on the Individual, Vol. 1*; E. M. Jellinek (R.), 425, Nov. '43.

Alcoholics Anonymous, Therapeutic Mechanisms; Harry M. Tiebout, 468, Jan. '44.

##### Alcoholism:

Amphetamine Sulfate in Aborting the Acute Alcoholic Cycle; Michael M. Miller, 800, May '44.

Hospital Treatment of Alcoholism; James H. Wall, and Edward B. Allen, 474, Jan. '44.

Review of Psychiatric Progress, 1943; Karl M. Bowman, Harry C. Solomon, and Joseph Wortis, 537, Jan. '44.

Yale Plan Clinics for Inebriates (Ed.), 844, May '44.

American Bar Association Reports on Socialized Medical Bill (Ed.), 848, May '44.

*American Cities and States; Variation and Correlation in Institutions, Activities and the Personal Qualities of the Residents*; Edward L. Thorndike (R.), 428, Nov. '43.

American Journal of Mental Deficiency, Editorial Office Removed to Coldwater, Mich. (Ed.), 151, July '43.

##### American Journal of Psychiatry:

American Journal of Psychiatry (formerly American Journal of Insanity) 1844-1944; William Rush Dunton, Jr. (Cent.): 45, Apr. '44; Second Half Century of the Journal; William Rush Dunton, Jr., (Cent.): 41, Apr. '44.

Centenary Number (Cent.), 1-199, Apr. '44.

Editors: See Editors.

Subscription Rates reduced for Medical Students and Internes, 575, Jan. '44.

##### American Psychiatric Association.

###### Detroit:

99th annual meeting, 147; July '43.

###### Philadelphia:

100th annual meeting.

Centennial meeting, 575, Jan. '44; 726, Mar. '44.

Historical Exhibits, 422, Nov. '43.

Nominating Committee, 574, Jan. '44.

Notice to Contributors, 293, Sept. '43.

Railroad Reservations, 575, Jan. '44.

Constitution, Notice of Proposed Change, 574, Jan. '44.

Home for Association, 575, Jan. '44.

*American Review of Soviet Medicine* (Ed.), 849, May '44.

*America's Last King*; Manfred S. Guttmacher (R.), 155, July '43.

Amphetamine Sulfate: See Benzedrine.

##### Annual Reports:

Commonwealth Fund and Mental Health, 847, May '44.

Rockefeller Foundation, 847, May '44.

Annulment or Divorce for Insanity, English and American Law; William Edward McCurdy, 185, Sept. '43.

Anorexia Nervosa; Metabolism and Its Relation to Psychopathologic Reactions; S. M. Small, and A. T. Milhorat, 681, Mar. '44.

##### Anthropology:

*Balinese Character, A Photographic Analysis*; Gregory Bateson, and Margaret Mead (R.), 156, July '43.

## Army:

*Administration:*

Col. Wm. Menninger to direct Psychiatric Service in U. S. Army (Ed.) 574, Jan. '44.

*Canada:*

Psychiatry in the Canadian Army; J. D. M. Griffin, D. G. McKerracher, and F. S. Lawson, 137, July '43.

*Disability during Training Period:*

Psychoses Occurring during Training Period; Margaret Hitschman, and Zuleika Yarrell, 301, Nov. '43.

Veterans of World War II with Neuropsychiatric Diagnoses; Charles B. Huber, 306, Nov. '43.

*Initial Selection of Recruits:*

Ratio of Voluntary Enlistment to Induction in Neuropsychiatric Disorders; Frederick Lemere, and Edward D. Greenwood, 312, Nov. '43.

*Mental Hygiene:*

Mental Hygiene for the Trainee; R. Robert Cohen, 62, July '43.

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Tattooing among Selectees; Joseph Lander, and Harold M. Kohn, 326, Nov. '43.

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Army Psychiatry in Training Units; Franklin G. Ebaugh, 28, July '43.

Replacement Training Center Consultation Service; Bernard A. Cruvant, 41, July '43.

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- Children's Behavior Problems*; Luton Ackerson (R.), 156, July '43.
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- War Attitudes of Chicago Youths, 839, May '44.
- Counseling and Psychotherapy*; Carl R. Rogers (R.), 719, Mar. '44.
- Creative Unconscious*; Hanns Sachs (R.), 426, Nov. '43.
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Sex Offenders, Psychiatric Study of 250; Benjamin Apfelberg, Carl Sugar, and Arnold Z. Pfeffer, 762, May '44.

## D

Defense Workers, Psychiatric Casualties among; Milton Rosenbaum, and John Romano, 314, Nov. '43.

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Historical Sidelights on Delinquency; Gregory Zilboorg, 757, May '44.

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Law Enforcement Aspects in Delinquency; Edmund P. Coffey, 347, Nov. '43.

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EEG in Obsessive-Compulsive States; B. B. Pacella, P. P. Poiatin, and S. H. Nagler, 830, May '44.

EEG in Late Post-Traumatic Cases; Milton Greenblatt, 378, Nov. '43.

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Borderline Cases; Abraham Myerson, 355, Nov. '43.

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Convulsion Syndrome; Paul H. Wilcox, 668, Mar. '44.

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In the Navy; Alexander Levine, 320, Nov. '43.

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Brain Lesions with "Epileptiform" Seizures in the Monkey; S. Eugene Barrera, Leonore M. Kopeloff, and Nicholas Kopeloff, 727, May '44.

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 Forensic Psychiatry: See also Legislation.  
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 Freud's Scientific Cradle; Fritz Wittels, 521, Jan. '44.  
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 Cacogenic Insemination, Case Report; Abraham Myerson, 285, Sept. '43.  
 Review of Psychiatric Progress, 1943; Franz J. Kallmann, 551, Jan. '44.  
 Historical:  
*America's Last King*; Manfred S. Guttmacher (R.), 155, July '43.  
 Centenary Number (Cent.): 1-199, Apr. '44.  
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Institutionalized Depopulation in Illinois State Hospitals; Conrad Sommer, and Jack Weinberg, 456, Jan. '44.

*Mentally Ill and Public Provision for Their Care in Illinois*; Stuart K. Jaffary (R.), 577, Jan. '44.

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Psychiatric Casualties among Defense Workers; Milton Rosenbaum, and John Romano, 314, Nov. '43.

Psychiatrist and Industrial Organization (Ed.), 286, Sept. '43.

Psychiatry in Industry; V. V. Anderson, (Cent.): 134, Apr. '44.

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Insulin: See also Electroshock Therapy, Metrazol Therapy.

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Japanese Relocation Center, Arizona; Psychiatric Problems in Community Management; Alexander H. Leighton, 328, Nov. '43.

Journalism, Psychiatric; M. K. Amdur, 205, Sept. '43.

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Kilgore, Bill (Ed.), 418, Nov. '43.

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Sterilization (Ed.), 846, May '44.

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Provision in Act for Rehabilitation of the Mentally Handicapped (Ed.), 289, Sept. '43.

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Lobotomy, Bilateral Prefrontal; Lloyd H. Ziegler, 178, Sept. '43.

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## M

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Massachusetts, Casualties in Institutions, Statistical Analysis; Walter W. Jetter, and Rollin V. Hadley, 506, Jan. '44.

*Medical Parasitology*; James T. Culbertson (R.), 297, Sept. '43.

*Medical Psychology, History of*; Gregory Zilboorg (R.), 580, Jan. '44.

## Memory:

Measurement of Remembering; Fred Feldman, and D. Ewen Cameron, 788, May '44.

Menninger, William, to direct Psychiatric Service in United States Army (Ed.), 574, Jan. '44.

Menstrual Cycles, Psychological Control Studies; George E. Daniels, 231, Sept. '43.

## Mental Deficiency:

Convulsive Disorders in Feeble-minded; R. W. Waggoner, and J. G. Sheps, 497, Jan. '44.

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Thinking in Brain Crippled Deficient Children; Alfred A. Strauss, 639, Mar. '44.

*Mental Health in College*; Clements C. Fry (R.), 295, Sept. '43.

## Mental Hospitals:

Casualties in Institutions in Massachusetts; Walter W. Jetter, and Rollin V. Hadley, 506, Jan. '44.

Factors Reserving Trend of Population Growth in Illinois State Hospitals; Conrad Sommer, and Jack Weinberg, 456, Jan. '44.

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Incidence of Mental Disease in New York State; Christian Tietze, 402, Nov. '43.

Mental Hospital Nursing in United States and Ontario; Laura Fitzsimmons, 623, Mar. '44.

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- Psychiatry in Philadelphia: *See* Pennsylvania.
- Mental Hygiene: *See also* Military Mental Hygiene.
- Developments in Virginia (E.), 710, Mar. '44.
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- Mental Illness; A Guide for the Family*; Edith Stern, and Samuel W. Hamilton (R.), 425, Nov. '43.
- Merchant Marine: *See also* Air Force, Army, Military Psychiatry, Navy.
- Group Therapy in Medical Problems for Merchant Seamen; Stephen Sherman, 127, July '43.
- Traumatic War Neuroses in Merchant Seamen, Morale Factors; Daniel Blain, 131, July '43.
- Traumatic War Neuroses in Merchant Seamen, Psychopathology of; Paul H. Hoch, 124, July '43.
- Traumatic War Neuroses in Merchant Seamen, Statistical Analysis; William A. Bellamy, 114, July '43.
- War Neuroses, Environment in Treatment; Howard W. Potter, 120, July '43.
- Metrazol, Rorschach Method, Prognostic Possibilities; Woodrow W. Morris, 222, Sept. '43.
- Military Mental Hygiene: *See also* Military Psychiatry.
- Mental Hygiene for the Trainee; R. Robert Cohen, 62, July '43.
- Military Mental Hygiene Unit; Harry L. Friedman, 34, July '43.
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- Function of Neuropsychiatry in the Army; Roy D. Halloran, and Malcolm J. Farrell, 14, July '43.
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- Review of Psychiatric Progress, 1943; Winfred Overholser, and Joseph Wortis, 558, Jan. '44.
- School of Military Neuropsychiatry; William C. Porter, 25, July '43.
- Symposium on Military Psychiatry, 1-137, July '43.
- Visit of British Military Psychiatrists (Ed.), 569, Jan. '44.
- Military Psychology:
- Psychology for the Fighting Man* (R.), 435, Nov. '43.
- Mind, Medicine and Man*; Gregory Zilboorg (R.), 716, Mar. '44.
- Mind: Perception and Thought in Their Constructive Aspects*; Paul Schilder (R.), 155, July '43.
- Mitchell, Silas Weir, 1829-1914; Beverley Randolph Tucker, (Cent.): 80, Apr. '44; *Illust.*, (Cent.): 80, Apr. '44.
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- Music as a Therapeutic Agent at Eloise Hospital; Ira M. Altschuler, 792, May '44.
- Myokinetic Psychodiagnosis (M. P. D.) of Dr. Emilio Mira; John L. Simon, 334, Nov. '43.
- N
- Narrative for a Specialist; Alan Gregg, (Cent.): 191, Apr. '44.
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- National Foundation for Infantile Paralysis (Ed.), 293, Sept. '43; 573, Jan. '44; 848, May '44.
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- Nazi Medicine (Ed.), 149, July '43.
- Navy: *See also* Air Force, Army, Merchant Marine, Military Psychiatry.
- Enuresis in the Navy; Alexander Levine; 320, Nov. '43.
- Movement Mannerism in Screening Examination; L. A. Pennington, and R. J. Mearin, 628, Mar. '44.
- Neuroses Resulting from Combat; E. Rogers Smith, 94, July '43.
- Psychiatric Observations on Board U. S. S. *Wasp*; B. W. Hogan, 91, July '43.
- Psychiatry in Advanced Mobile Base Hospitals; Howard P. Rome, 85, July '43.
- Psychiatry in the Training Station; Leon J. Saul, 74, July '43.
- Red Cross Rehabilitation Program for Psychiatric Casualties in United States Navy; Margaret Hagan, and Addison M. Duval, 105, July '43.
- Selection of Naval Aviation Cadets; Wilbur E. Kellum, 80, July '43.
- Subdural Hematoma and Effusion from Blast; W. D. Abbott, F. O. Due, and W. A. Nosick, 98, July '43.
- Negro, Manic Psychosis in a; E. J. Wiggins, and R. S. Lyman, 781, May '44.
- Nervousness, Indigestion and Pain*; Walter C. Alvarez (R.), 850, May '44.
- Netherlands Physicians, Morale of (Ed.), 151, July '43.
- Neurology*; Roy R. Grinker (R.), 721, Mar. 1944.
- Neuropathology:
- Aftereffects of Brain Injuries in War*; Kurt Goldstein (R.), 153, July '43.
- Glioblastoma Multiforme; Tumor Agudo do Cerebro*; Jarbas Pernambucano (R.), 296, Sept. '43.
- Review of Psychiatric Progress, 1943; John C. Whitehorn, 550, Jan. '44.
- Subdural Hematoma and Effusion from Blast; W. D. Abbott, F. O. Due, and W. A. Nosick, 98, July '43.
- Neuropsychiatry in a General Hospital; Thomas J. Heldt, 817, May '44.
- Neuroses:
- Effect of Respiratory Pattern (Spirogram) on Psychoneurotics; Jacob E. Finesinger, 659, Mar. '44.

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Cent.):  
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John C.  
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er, 659,

- Psychoneuroses Incidental to Pilot Training; Walter O. Klingman, 217, Sept. '43.  
*Therapy of Neuroses and Psychoses*; Samuel Herman Kraines (R.), 851, May '44.  
Neurosurgery:  
Problem of Psychosurgery; George W. Kisker, 180, Sept. '43.  
Review of Psychiatric Progress, 1943; Nolan D. C. Lewis, 533, Jan. '44.  
Neurosyphilis:  
Review of Psychiatric Progress, 1943; Karl M. Bowman, Harry C. Solomon, and Joseph Wortis, 538, Jan. '44.  
New York:  
Academy of Sciences announces A. Cressy Morrison Prize Contest for 1944 (Ed.), 847, May '44.  
Incidence of Mental Disease in New York State; Christian Tietze, 402, Nov. '43.  
New York Story (Ed.), 143, July '43.  
State Lunatic Asylum at Utica in 1844, Illust., (Cent.): 31, Apr. '44.

## O

- Obituaries:  
Beers, Clifford Whittingham (1876-1943), 146, July '43; 437, Nov. '43; Illust. (Cent.): 98, Apr. '44.  
Campbell, Charles Macfie (1876-1943), 287, Sept. '43; 438, Nov. '43; 441, Nov. '43.  
Coriat, Isador H. (1875-1943), 582, Jan. '44.  
Diefendorf, Allen Ross (1871-1943), 582, Jan. '44.  
Diller, Theodore (1863-1943), 584, Jan. '44.  
Halloran, Roy Dennis (1894-1943), 569, Jan. '44; 723, Mar. '44.  
Sachs, S. Bernard (1858-1944), 711, Mar. '44; May '44.  
Smith, Philip (1872-1944), 724, Mar. '44.  
Wile, Ira S. (1877-1943), 583, Jan. '44.  
Work, Hubert (1860-1942), 158, July '43; Illust. 158, July '43.  
Obsessive-Compulsive States, EEG. Studies in; B. L. Pacella, P. P. Polatin, and S. H. Nagler, 830, May '44.  
Occupational Therapy:  
Course at University of Illinois, (Ed.), 572, Jan. '44.  
Exhibit at Museum of Modern Art, (Ed.), 152, July '43.  
In the Armed Forces (Ed.), 149, July '43.  
Review of Psychiatric Progress, 1943; George S. Stevenson, Mary E. Corcoran, Beatrice D. Wade, and Maida H. Solomon, 554, Jan. '44.  
Oxygen:  
Oxygen Content of Cerebral Blood in Patients with Acute Symptomatic Psychoses and Destructive Brain Lesions; Harold E. Himwich, and Joseph F. Fazekas, 648, Mar. '44.  
Rapid Changes in the O<sub>2</sub> Tension of Cerebral Cortex during Induced Convulsions; E. W. Davis, W. S. McCulloch, and E. Roseman, 825, May '44.

## P

- Palestine, Neurology and Psychiatry in; L. Halpern, 775, May '44.  
Paranoid Psychoses and Schizophrenia among College Students; Theophile Raphael, and Leonard E. Himler, 443, Jan. '44.  
Pennsylvania:  
Philadelphia:  
Pennsylvania Hospital in 1802, Illust. (Cent.): 8, Apr. '44.  
Philadelphia in 1828, Illust., (Cent.): 16, Apr. '44.  
Psychiatry in Philadelphia in 1844; Earl D. Bond, (Cent.): 16, Apr. '44.  
Psychiatry in Philadelphia in 1944; Harold D. Palmer, 690, Mar. '44.  
Personality:  
*Expression of the Personality*; Werner Wolf (R), 576, Jan. '44.  
*Personality and Sexuality of the Physically Handicapped Woman*; Carney Landis, and M. Marjorie Bolles (R.), 427, Nov. '43.  
Personality Types of the Addicts; Robert H. Felix, 462, Jan. '44.  
Premorbid Personality in Arteriosclerotic Psychoses; David Rothschild, 501, Jan. '44.  
Psychopathic Personalities Before, During and After Hospitalization; W. Lynwood Heaver, 342, Nov. '43.  
Philadelphia: See Pennsylvania.  
Physiological Therapy:  
Review of Psychiatric Progress, 1943; Karl M. Bowman, Harry C. Solomon, and Joseph Wortis, 538, Jan. '44.  
Pollock, Dr., and Mental Hygiene (Ed.), 843, May '44.  
Post-Graduate Education: See also Psychiatric Education.  
Positions:  
Child Psychiatrist, Cleveland (Ed.), 715, Mar. '44.  
Psychiatric Social Worker, California (Ed.), 714, Mar. '44.  
Post-Traumatic:  
EEG. in Late Post-Traumatic Cases; Milton Greenblatt, 378, Nov. '43.  
EEG. in Post-Traumatic Epilepsy; Frederic A. Gibbs, Walter R. Wegner, and Erna L. Gibbs, 738, May '44.  
Intellectual Impairment in Head Injuries; Jurgen Ruesch, 480, Jan. '44.  
Post-Traumatic Epilepsy; Wilder Penfield, 750, May '44.  
War Neuroses:  
Neuroses Resulting from Combat; E. Rogers Smith, 94, July '43.  
Post-Traumatic War Neuroses, Environment in Treatment; Howard W. Potter, 120, July '43.  
Post-Traumatic War Neuroses in Merchant Seamen, Morale Factors; Daniel Blain, 131, July '43.  
Post-Traumatic War Neuroses in Merchant Seamen, Psychopathology; Paul H. Hoch, 124, July '43.

- Post-Traumatic War Neuroses in Merchant Seamen, Statistical Analysis, William A. Bellamy, 114, July '43.
- Prepsychotic:  
Prodromal Factors in Schizophrenia; Mary Phyllis Wittman, and D. Louis Steinberg, 811, May '44.
- Presidential Addresses, A Review; Clements C. Fry, and Edna G. Rostow (Cent.): 69, Apr. '44.
- President's Address, 1943, "Wartime Psychiatry"; Arthur H. Ruggles, 1, July '43.
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*Hospital Discharge Study, Vol. 1*; R. N. Dear-dorf and M. Fraenkel (R.), 297, Sept. '43.
- Incidence of Mental Disease in New York State; Christian Tietze, 402, Nov. '43.
- Institutional Depopulation in Illinois State Hos-pitals; Conrad Sommer, and Jack Weinberg, 456, Jan. '44.
- Proceedings, 99th annual meeting, 240, Sept. '43; 413, Nov. '43.
- Pseudo-Psychiatry (Ed.), 288, Sept. '43.
- Psychiatric Education:  
Developments in Great Britain (Ed.), 841, May '44.
- Experiment in Postgraduate Education; Charles A. Rymer, and Franklin G. Ebaugh, 752, May '44.
- History of Psychiatric Education in United States from 1844 to 1944; Franklin G. Ebaugh, (Cent.): 151, Apr. '44.
- Psychiatric Educational Society, Berkeley, Cal. (Ed.), 714, Mar. '44.
- Review of Psychiatric Progress, 1943; Charles A. Rymer, 561, Jan. '44.
- School of Military Psychiatry; William C. Por-ter, '25, July '43.
- Psychiatric Journalism; M. K. Amdur, 205, Sept. '43.
- Psychiatric Nursing:  
Graduate Psychiatric Nurse, Need of Commis-sioning (Ed.), 420, Nov. '43.
- Introduction to Psychiatry*; W. Earl Biddle, and Mildred Van Sickel (R.), 717, Mar. '44.
- Mental Hospital Nursing in United States and Ontario; Laura Fitzsimmons, 623, Mar. '44.
- Principles of Psychiatric Nursing*; Madeline Elliott Ingram (R.), 850, May '44.
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What of the Future of American Psychiatry; Clarence M. Hincks, (Cent.): 195, Apr. '44.
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- Psychiatric Social Work:  
Red Cross Rehabilitation Program for Psychi-atric Casualties in the United States Navy; Margaret Hagan, and Addison M. Duval, 105, July '43.
- Review of Psychiatric Progress, 1943; George S. Stevenson, Mary E. Corcoran, Beatrice D. Wade, and Maida H. Solomon, 553, Jan. '44.
- Psychiatric Word Book*; Richard H. Hutchings (R.), 852, May '44.
- Psychiatry A Century Ago (in 1840); M. K. Amdur, (Cent.): 18, Apr. 1944; Illust. "A Plan for a Lunatic Asylum," (Cent.): 20, Apr. '44.
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Freud's Scientific Cradle; Fritz Wittels, 521, Jan. '44.
- Psychoanalytic Perspectives; Edward A. Strecker, 516, Jan. '44.
- Psychology:  
*Lewin's Topological and Vector Psychology*; Robert H. Leeper (R.), 718, Mar. '44.
- Psychological Control Studies of Urinary Sex Hormones; George E. Daniels, 231, Sept. '43.
- Psychology in Nursing Practice*; Philip Law-rence Harriman, Lela L. Greenwood, and Charles E. Skinner (R.), 852, May '44.
- Psychometrics:  
Review of Psychiatric Progress, 1943; F. L. Wells, 565, Jan. '44.
- Psychopathic Personalities Before, During and After Hospitalization; W. Lynwood Heaver, 342, Nov. '43.
- Psycho-Physiological Reactions to Experimentally Induced Displacement; G. L. Freeman, and J. H. Pathman, 406, Nov. '43.
- Psychosomatic:  
Anorexia Nervosa; Metabolism and Its Relation to Psychobiologic Reactions; S. M. Small, and A. T. Milhorat, 681, Mar. '44.
- Clinical Application of Psychopathology to Gen-eral Medical Problems*; Edward Weiss, and O. Spurgeon English (R.), 579, Jan. '44.
- Emotional Disturbances following Upper Respir-atory Infection in Children; Helen G. Richter, 387, Nov. '43.
- National Committee for Mental Hygiene An-nounces Establishment of Fund for Psycho-somatic Research (Ed.), 849, May '44.
- Nervousness, Indigestion and Pain*; Walter C. Alvarez (R.), 850, May '44.
- Review of Psychiatric Progress, 1943; Nolan D. C. Lewis, 533, Jan. '44.
- Psychosurgery: See Neurosurgery.
- Psychotherapy: See also Group Therapy.  
Individual and Group Therapy as used in Medi-cal Program for Merchant Seamen; Stephen Sherman, 127, July '43.
- Psychotherapy and Counseling*; Carl R. Rogers (R.), 719, Mar. '44.
- Psychotherapy in Medical Practice*; Maurice Levine (R.), 156, July '43.
- Psychotherapy with Children*; F. H. Allen (R.), 154, July '43.

## R

- Red Cross Rehabilitation Program for Psychiatric Casualties in the United States Navy; Mar-garet Hagan, and Addison M. Duval, 105, July '43.
- Rehabilitation:  
National Vocational Rehabilitation (Ed.), 715, Mar. '44.
- Principles and Practices of Rehabilitation*; John Eisele Davis (R.), 720, Mar. '44.



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- Red Cross Rehabilitation Program for Psychi-  
atric Casualties in the United States Navy;  
Margaret Hagan, and Addison M. Duval, 105,  
July '43.  
Rehabilitation of Epileptic Service Men; William  
Gordon Lennox, 202, Sept. '43.  
Rehabilitation of the Mentally Handicapped  
(Ed.), 289, Sept. '43.  
Remembering, Measurement of; Fred Feldman,  
and D. Ewen Cameron, 788, May '44.  
Research Awards: *See* Fellowship Awards.  
Respiration:  
Effect of Respiratory Pattern (Spirogram) on  
Psychoneurotics; Jacob E. Finesinger, 659,  
Mar. '44.  
Spirogram in Psychiatric Disorders; Jacob E.  
Finesinger, 159, Sept. '43.  
*Review of General Semantics* (Ed.), 848, May '44.  
Review of Psychiatric Progress, 1943 (Symposi-  
um); 533, Jan. '44.  
*Revista Argentino-Norteamericana de Ciencias  
Medicas* (Ed.), 573, Jan. '44.  
Rise to the Person and the Concept of Sets of  
Wholes or Integrates; Adolf Meyer, (Cent.):  
100, Apr. '44.  
Rockefeller Foundation: *See* Annual Reports.  
*Roentgen Treatment of Diseases of the Nervous  
System*; Cornelius G. Dyke, and Leo M.  
Davidoff (R.), 297, Sept. '43.  
Rorschach Test:  
Course at Michael Reese Hospital (Ed.), 714,  
Mar. '44.  
Method in Metrazol Therapy, Prognostic Pos-  
sibilities; Woodrow W. Morris, 222, Sept. '43.  
Royal Medico-Psychological Association (Ed.),  
713, Mar. '44; 841, May '44.  
Ruggles, Arthur Hiler (President 1942-43), Bio-  
graphical Sketch; Ross McC. Chapman, 9,  
July '43; Illust., 1, July '43.  
Rush, Benjamin and American Psychiatry; Clifford  
B. Farr, (Cent.): 3, Apr. '44; Illust., (Cent.):  
3, 12, Apr. '44.

## S

- Sachs, S. Bernard (Ed.), 711, Mar. '44; (Obit.)  
1858-1944, 853, May '44; Illust., 853, May '44.  
Safeguarding Military Information (Ed.), 715,  
Mar. '44.  
Salmon Lectures:  
1943, Speaker, Dr. Abraham A. Brill (Ed.), 571,  
Jan. '44.  
1944 to be delivered by Brigadier John Rees  
(Ed.), 848, May '44.  
Schizophrenia: *See also* Electroshock Therapy,  
Insulin Therapy, Metrazol Therapy, Military  
Psychiatry.  
*Conceptual Thinking in Schizophrenia*; Eugenia  
Hanfmann, and Jacob Kasanin (R.), 299,  
Sept. '43.  
Prodromal Factors in Schizophrenia; Mary Phyl-  
lis Wittman, and D. Louis Steinberg, 811, May  
'44.  
Schizophrenia and Paranoid Psychoses among  
College Students; Theophile Raphael, and  
Leonard E. Himler, 443, Jan. '44.

- Schizophrenia in a Four Year Old Boy;  
H. Robert Blank, Olive Cushing Smith, and  
Hilde Bruch, 805, May '44.  
Schools, History of Mental Hygiene in the; W.  
Carson Ryan, (Cent.): 144, Apr. '44.  
Selective Service Boards, Psychiatry for (Ed.),  
152, July '43.  
Selective Service System Program (Ed.), 419, Nov.  
1943.  
Serologic Reactions (Ed.), 572, Jan. '44.  
Sex Hormones, Psychological Control Studies,  
Report on Three Menstrual Cycles; George E.  
Daniels, 231, Sept. '43.  
Sex Offenders, Psychiatric Study of 250 Cases;  
Benjamin Apfelberg, Carl Sugar, and Arnold  
Z. Pfeffer, 762, May '44.  
*Sex Variants, A Study of Homosexual Patterns*;  
George Henry (R.), 429, Nov. '43.  
Smith, Philip, 1872-1944 (Obit.), 724, Mar. '44.  
Social Psychiatry:  
Japanese Relocation Center, Arizona; Psychiatric  
Problems in Community Management; Alex-  
ander H. Leighton, 328, Nov. '43.  
Socialized Medicine (Ed.), 848, May '44.  
Sociology:  
Societal Evolution and Psychiatry; Leland E.  
Hinsie, (Cent.): 174, Apr. '44.  
Sociological Changes and Juvenile Delinquency;  
Douglas A. Thom., 452, Jan. '44.  
Sodium Amytal with Electroshock Therapy; David  
J. Impastato, Robert Bak, John Frosch, and  
S. Bernard Wortis, 358, Nov. '43.  
Solomon, Dr. Harry C., appointed Professor of  
Psychiatry at Harvard University, and Medi-  
cal Director of the Boston Psychopathic Hos-  
pital (Ed.), 421, Nov. '43.  
*Soviet Medicine, American Review of* (Ed.), 849,  
May '44.  
Spencer, Dr. Harvey, appointed to Austin Riggs  
Foundation (Ed.), 573, Jan. '44.  
Spirogram:  
Effect of Respiratory Pattern (Spirogram) on  
Psychoneurotics; Jacob E. Finesinger, 659,  
Mar. '44.  
Spirogram in Psychiatric Disorders; Jacob E.  
Finesinger, 159, Sept. '43.  
State Medicine, Psychiatry as; Albert Deutsch,  
(Cent.): 184, Apr. '44.  
Sterilization in California (Ed.), 846, May '44.  
Strecker, Dr. E. A. Named Consultant for Army  
Air Forces (Ed.), 292, Sept. '43.

## T

- Tattooing among Selectees; Joseph Lander, and  
Harold M. Kohn, 326, Nov. '43.  
Testamentary Capacity, Psychiatric Aspects; Gus-  
tav Aschaffenburg, 606, Mar. '44.  
Testimony, Expert, Contribution to History of;  
Horatio M. Pollock, and E. David Wiley,  
(Cent.): 119, Apr. '44.  
Tests: *See also* Rorschach Tests.  
Intellectual Impairment in Head Injuries; Jurgen  
Ruesch, 480, Jan. '44.

- Measurement of Remembering; Fred Feldman, and D. Ewen Cameron, 788, May '44.  
*Mental Examiner's Handbook* (R.); F. L. Wells, and Jurgen Ruesch, 155, July '43.  
 Myokinetic Psychodiagnosis (M. P. D.) of Dr. Emilio Mira; John L. Simon, 334, Nov. '43.  
 Traumatic: *See also* Post-Traumatic.  
 Thinking in Brain Crippled Deficient Children; Alfred A. Strauss, 639, March. '44.  
 Trends in Psychiatry; Abraham Myerson, (Cent.): 161, Apr. '44.

## U

- Utica, New York State Lunatic Asylum (1844), Illust., (Cent.): 31, Apr. '44.

## V

- Vertebrate Eye and its Adaptive Radiation*; Gordon Lynn Walls (R.), 721, Mar. '44.  
 Veterans Administration, Eligibility for Hospitalization (Ed.), 150, July '43.  
 Virginia, Building Program and Mental Hygiene Developments in (Ed.), 710 Mar. '44.  
*Vocational Guidance*; Kenneth H. Rogers (R.), 428, Nov. '43.

## W

## War:

- Aftereffects of Brain Injuries in War*; Kurt Goldstein (R.), 153, July '43.  
*Children Reactions to the War*; J. Louise Despert (R.), 153, July '43.  
*Our Children Face War*; Anna W. M. Wolf (R.), 153, July '43.  
 Reprints of Articles on War Problems (Ed.), 151, July '43.  
 War Attitudes of Chicago Youths (Ed.), 570, Jan. '44; (Correspondence), 839, May '44.  
*War without Inflation*; George Katona (R.), 423, Nov. 1943.  
 Wartime Psychiatry (Presidential Address); Arthur H. Ruggles, 1, July '43.  
 Wile, Ira S., 1877-1943 (Obit.), 583, Jan. '44.  
 Work, Hubert, 1860-1942 (Obit.), 158, July '43; Illust., 159, July '43.

## Y

- Yale Plan Clinics for Inebriates (Ed.), 844, May '44.  
*Yearbook (1942) of Neurology, Psychiatry and Endocrinology*; Hans H. Reese, Nolan D. C. Lewis, and Elmer L. Sevringhaus (R.), 424, Nov. '43; (1943), (R.), 852, May '44.

Abbot  
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 184  
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## AUTHORS INDEX

## PART 2

## A

- Abbott, Walter D., Due, Floyd O., and Nosik, William A.; *Psychiatric Diagnosis of Subdural Hematoma and Effusion from Blast*, 98, July '43.
- Allen, Edward B.: *See* Wall, James H., jt. auth.
- Altshuler, Ira M.; *Four Years' Experience with Music as a Therapeutic Agent at Eloise Hospital*, 792, May '44.
- Amdur, M. K.; *Psychiatry a Century Ago—in 1840; (Cent.): 18, April '44.*
- Amdur, M. K.; *The Dawn of Psychiatric Journalism*, 205, Sept. '43.
- Anderson, V. V.; *Psychiatry in Industry; (Cent.), 134, April '44.*
- Apfelberg, Benjamin, Sugar, Carl, and Pfeffer, Arnold Z.; *A Psychiatric Study of 250 Sex Offenders*, 762, May '44.
- Aschaffenburg, Gustav; *The Psychiatric Aspect of Testamentary Capacity*, 606, Mar. '44.

## B

- Bak, Robert: *See* Impastato, David J., jt. auth.
- Ballin, Marian R.; *A Follow-Up Study of Paroles from California State Mental Hospitals*, 799, May '44.
- Banay, Ralph S.; *Immaturity and Crime*, 170, Sept. '43.
- Barrera, S. Eugene, Kopeloff, Lenore M., and Kopeloff, Nicholas; *Brain Lesions Associated with Experimental "Epileptiform" Seizures in the Monkey*, 727, May '44.
- Bellamy, William A.; *Statistical Analysis of Traumatic War Neurosis in Merchant Seamen*, 114, July 1943.
- Berman, Louis: *See* Riess, Bernard F., jt. auth.
- Billig, Otto, and Freeman, W. T.; *Fatal Catatonia*, 633, Mar. '44.
- Blain, Daniel; *Personal and Morale Factors in the Etiology and Prevention of Traumatic War Neurosis in Merchant Seamen*, 131, July '43.
- Blank, H. Robert, Smith, Olive Cushing, and Bruch, Hilde; *Schizophrenia in a Four Year Old Boy*, 805, May '44.
- Bond, Earl D.; *Psychiatry in Philadelphia in 1844; (Cent.), 16, Apr. '44.*
- Bowman, Karl M., Solomon, Harry C., and Wortis Joseph; *Alcoholism, Neurosyphilis, Physiological Therapy, Geriatrics*, 537, Jan. '44.
- Brosin, Henry W.; *Panic States and Their Treatment*, 54, July '43.
- Bruch, Hilde: *See* Blank, H. Robert, jt. auth.

## C

- Cameron, D. Ewen; *See* Feldman, Fred, jt. auth.
- Chapman, Ross Mc.; *Biographical Sketch of Arthur H. Ruggles*, 9, July '43.
- Cheney, Clarence O.; *Dorothea Lynde Dix; (Cent.), 61, Apr. '44.*

- Coffey, Edmund P.; *Law Enforcement Aspects of the Delinquency Problem*; 347, Nov. '43.
- Cohen, R. Robert; *Mental Hygiene for the Trainee*; 62, July '43.
- Corcoran, Mary E.: *See* Stevenson, George S., jt. auth.
- Cruvant, Bernard A.; *Replacement Training Center Consultation Service*, 41, July '43.

## D

- Daniels, George E.; *An Approach to Psychological Control Studies of Urinary Sex Hormones*; 231, Sept. '43.
- Davis, E. W., McCulloch, W. S., and Roseman, E.; *Rapid Changes in the O<sub>2</sub> Tension of Cerebral Cortex during Induced Convulsions*, 825, May '44.
- Denny-Brown, D.; *The Clinical Aspects of Traumatic Epilepsy*, 585, Mar. '44.
- Deutsch, Albert; *Psychiatry as State Medicine; (Cent.), 184, Apr. '44.*
- Dewan, John G.: *See* Proctor, Lorne D., jt. auth.
- Due, Floyd O.: *See* Abbott, Walter D., jt. auth.
- Dunton, William Rush, Jr.; *The American Journal of Psychiatry (formerly the American Journal of Insanity) 1844-1944; (Cent.): 45, Apr. '44.*
- Dunton, William Rush, Jr.; *The Second Half-Century of the Journal; (Cent.): 41, Apr. '44.*
- Duval, Addison M.: *See* Hagan, Margaret, jt. auth.

## E

- Ebaugh, Franklin G.; *Major Psychiatric Considerations in a Service Command*, 28, July '43.
- Ebaugh, Franklin G.; *The History of Psychiatric Education in the United States from 1844 to 1944; (Cent.): 151, April '44.*
- Ebaugh, Franklin G.: *See* Rymer, Charles A., jt. auth.

## F

- Farr, Clifford B.; *Benjamin Rush and American Psychiatry; (Cent.): 3, Apr. '44.*
- Farrell, Malcolm J.: *See* Halloran, Roy D., jt. auth.
- Fazekas, Joseph F.: *See* Himwich, Harold E., jt. auth.
- Feldman, Fred, and Cameron, D. Ewen; *The Measurement of Remembering*, 788, May '44.
- Felix, Robert H.; *An Appraisal of the Personality Types of the Addict*, 462, Jan. '44.
- Finesinger, Jacob E.; *The Effect of Pleasant and Unpleasant Ideas on the Respiratory Pattern (Spirogram) in Psychoneurotic Patients*, 659, Mar. '44.
- Finesinger, Jacob E.; *The Spirogram in Certain Psychiatric Disorders*, 159, Sept. '43.
- Fitzsimmons, Laura; *Report of a Survey of Nursing in Mental Hospitals in the United States and Canada*, 623, Mar. '44.

- Freedman, Harry L.; The Services of the Military Mental Hygiene Unit, 34, July '43.  
 Freeman, G. L., and Pathman, J. H.; Physiological Reactions of Psychotics to Experimentally Induced Displacement, 406, Nov. '43.  
 Freeman, W. T.: See Billig, Otto, jt. auth.  
 Frosch, John: See Impastato, David J., jt. auth.  
 Fry, Clements C., and Rostow, Edna G.; The View from the Chair, A Review of Presidential Addresses; (Cent.): 69, Apr. '44.

## G

- Gibbs, Erna L.: See Gibbs, Frederic A., jt. auth.  
 Gibbs, Frederic A., and Lennox, William G.; Electroencephalography and Epilepsy, 544, Jan. '44.  
 Gibbs, Frederic A., Wegner, Walter R., and Gibbs, Erna L.; The Electroencephalogram in Post-Traumatic Epilepsy, 738, May '44.  
 Greenblatt, Milton; The EEG. in Late Post-Traumatic Cases, 378, Nov. '43.  
 Greenwood, Edward D.: See Lemere, Frederick, jt. auth.  
 Gregg, Alan; Narrative for a Specialist; (Cent.): 191, Apr. '44.  
 Griffin, J. D. M., McKerracher, D. G., and Lawson, F. S.; Psychiatry in the Canadian Army, 137, July '43.

## H

- Hadley, Rollin V.: See Jetter, Walter W., jt. auth.  
 Hagan, Margaret, and Duval, Addison M.; A Practical Red Cross Program for the Social Rehabilitation of Psychiatric Casualties in the United States Navy, 105, July '43.  
 Halloran, Roy D., and Farrell, Malcolm J.; The Function of Neuropsychiatry in the Army, 14, July '43.  
 Halpern, L.; Neurology and Psychiatry in Palestine, 775, May '44.  
 Haskell, Robert H.; Mental Deficiency over a Hundred Years, A Brief Historical Sketch of Trends, 107, Apr. '44.  
 Hastings, Donald W.: See Smith, Lauren H., jt. auth.  
 Heaven, W. Lynwood; A Study of Forty Male Psychopathic Personalities Before, During and After Hospitalization, 342, Nov. '43.  
 Heldt, Thomas J.; Neuropsychiatry in a General Hospital, 817, May '44.  
 Himler, Leonard E.: See Raphael, Theophile, jt. auth.  
 Himwich, Harold E.; Electroshock, A Round Table Discussion, 361, Nov. '43.  
 Himwich, Harold E., and Fazekas, Joseph F.; The Oxygen Content of Cerebral Blood in Patients with Acute Symptomatic Psychoses and Acute Destructive Brain Lesions, 648, Mar. '44.  
 Hinks, Clarence M.; What of the Future for American Psychiatry?; (Cent.): 195, Apr. '44.  
 Hinsie, Leland E.; Societal Evolution and Psychiatry, (Cent.): 174, Apr. '44.  
 Hirschman, Margaret, and Yarrell, Zuleika; Psychoses Occurring in Soldiers during the Training Period, 301, Nov. '43.

- Hoch, Paul H.; Psychopathology of the Traumatic War Neuroses, 124, July '43.  
 Hogan, B. W.; Psychiatric Observations of Senior Medical Officer on Board Aircraft Carrier U. S. S. *Wasp* during Action in Combat Areas at Time of Torpedoing and Survivors' Reaction, 90, July, '43.  
 Huber, Charles B.; A Review of Cases of Veterans of World War II Discharged with Neuropsychiatric Diagnoses; 306, Nov. '43.  
 Hughes, Joseph: See Smith, Lauren H., jt. auth.  
 Hutchings, Richard H.; The First Four Editors—Amariah Brigham, Founder and First Editor of the American Journal of Insanity, 1844-1849, (Cent.): 29, Apr. '44. (See also Dunton, William R., "The Second Half-Century of the Journal," (Cent.): 41, Apr. '44.)  
 T. Romeyn Beck, Editor, 1849-1854.  
 John P. Gray, Editor, 1854-1886.  
 G. Alder Blumer, Editor, 1886-1894.

## I

- Impastato, David J., Bak, Robert, Frosch, John, and Wortis, S. Bernard; Modification of the Electrofit. I. Sodium Amytal, 358, Nov. '43.

## J

- Jasper, Herbert, and Penfield, Wilder; Electroencephalograms in Post-Traumatic Epilepsy, Pre-operative and Post-operative Studies, 365, Nov. '43.  
 Jetter, Walter W., and Hadley, Rollin V.; A Study of Casualties Occurring in Institutions under the Supervision of the Massachusetts Department of Mental Health, 506, Jan. '44.

## K

- Kallmann, Franz J.; Heredity and Eugenics, 551, Jan. '44.  
 Kanner, Leo; Child Psychiatry, Mental Deficiency, 541, Jan. '44.  
 Kanner, Leo; The Origins and Growth of Child Psychiatry; (Cent.): 139, Apr. '44.  
 Kellum, Wilbur E.; Recent Developments in Selection of Candidates for Aviation Training, 80, July '43.  
 Kisker, George W.; Remarks on the Problem of Psychosurgery, 180, Sept. '43.  
 Klingman, Walter O.; Psychoneuroses Incidental to Pre-Flight and Primary Flight Pilot Training, 217, Sept. '43.  
 Kohn, Harold M.: See Lander, Joseph, jt. auth.  
 Kopeloff, Leonore M.: See Barrera, S. Eugene, jt. auth.  
 Kopeloff, Nicholas: See Barrera, S. Eugene, jt. auth.  
 Kubie, Lawrence S., and Margolin, Sydney; An Apparatus for the Use of Breath Sounds as a Hypnagogic Stimulus, 610, Mar. '44.  
 Kubie, Lawrence S., and Margolin, Sydney; The Process of Hypnotism and the Nature of the Hypnotic State, 611, Mar. '44.



## L

- Lander, Joseph, and Kohn, Harold M.; A Note on Tattooing among Selectees, 326, Nov. '43.  
 Lawson, F. S.: *See* Griffin, J. D. M., jt. auth.  
 Leighton, Alexander H.; The Psychiatric Approach in Problems of Community Management (From a Study of a Japanese Relocation Center), 328, Nov. '43.  
 Lemere, Frederick, and Greenwood, Edward E.; Ratio of Voluntary Enlistment to Induction in the Various Types of Neuropsychiatric Disorders, 312, Nov. '43.  
 Lennox, William Gordon; Rehabilitation of Epileptic Service Men, 202, Sept. '43.  
 Lennox, William Gordon: *See* Gibbs, Frederick A., jt. auth.  
 Levine, Alexander; Enuresis in the Navy, 320, Nov. '43.  
 Lewis, Nolan D. C.; General Clinical Psychiatry, Psychosomatic Medicine and Psychosurgery, 533, Jan. '44.  
 Lipschutz, Louis S.; Neuropsychiatry in a Staging Area, 47, July '43.  
 Lyman, R. S.: *See* Wiggins, E. J., jt. auth.

## Mc

- McCulloch, W. S.: *See* Davis, E. W., jt. auth.  
 McCurdy, William Edward; Insanity as a Ground for Annulment or Divorce in English and American Law, 185, Sept. '43.  
 McKerracher, D. G.: *See* Griffin, J. D. M., jt. auth.  
 McNeel, Burdett: *See* Proctor, Lorne D., jt. auth.

## M

- Margolin, Sydney: *See* Kubie, Lawrence S., jt. auth.  
 Mearin, R. J.: *See* Pennington, L. A., jt. auth.  
 Meyer, Adolf; The Rise to the Person and the Concept of Sets of Wholes or Integrates; (Cent.): 100, Apr. '44.  
 Milhorat, A. T.: *See* Small, S. M., jt. auth.  
 Miller, Michael M.; Amphetamine Sulfate in Aborting the Acute Alcoholic Cycle, 800, May '44.  
 Morris, Woodrow W.; Prognostic Possibilities of the Rorschach Method in Metrazol Therapy, 222, Sept. '43.  
 Murray, John M.; Psychiatry in the Army Air Forces, 21, July '43.  
 Myerson, Abraham; Borderline Cases Treated by Electric Shock, 355, Nov. '43.  
 Myerson, Abraham; Some Trends of Psychiatry; (Cent.): 161, Apr. '44.

## N

- Nagler, S. H.: *See* Pacella, B. L., jt. auth.  
 Newell, Nancy: *See* Yerbury, Edgar C., jt. auth.  
 Nosik, William A.: *See* Abbott, Walter D., jt. auth.

## O

- Overholser, Winfred, and Wortis, Joseph; Military Aviation, Administrative and Forensic Psychiatry, 558, Jan. '44.

## P

- Pacella, B. L., Polatin, P. P., and Nagler, S. H.; Clinical and EEG. Studies in Obsessive-Compulsive States, 830, May '44.  
 Palmer, Harold D.; Philadelphia and Psychiatry, 1944; 690, Mar. '44.  
 Parran, Thomas; Traumatic Neuroses in Merchant Seamen (Foreword), 114, July '43.  
 Pathman, J. H.: *See* Freeman, G. L., jt. auth.  
 Penfield, Wilder; Post-Traumatic Epilepsy, 750, May '44.  
 Penfield, Wilder: *See* Jasper, Herbert, jt. auth.  
 Pennington, L. A., and Mearin, R. J.; The Frequency and Significance of a Movement Mannerism for the Military Psychiatrist, 628, Mar. '44.  
 Pescor, M. J.; A Comparative Statistical Study of Male and Female Drug Addicts, 771, May '44.  
 Pfeffer, Arnold Z.: *See* Apfelberg, Benjamin, jt. auth.  
 Polatin, P. P.: *See* Pacella, B. L., jt. auth.  
 Pollock, Horatio M., and Wiley, E. David; A Contribution to the History of Psychiatric Expert Testimony; (Cent.): 119, Apr. '44.  
 Porter, William C.; The School of Military Neuropsychiatry, 25, July '43.  
 Potter, Howard W.; The Physical and Psychological Aspects of Environment Essential to the Treatment of Traumatic Neuroses of War, 120, July '43.  
 Price, Jerry C., and Putnam, Tracy J.; The Effect of Intrafamily Discord on the Prognosis of Epilepsy, 593, Mar. '44.  
 Proctor, Lorne D., Dewan, John G., and McNeel, Burdett; Variations in the Glucose Tolerance Observations in Schizophrenics Before and After Shock Treatment, 652, Mar. '44.  
 Putnam, Tracy J.: *See* Price, Jerry C., jt. auth.

## R

- Raphael, Theophile, and Himler, Leonard E.; Schizophrenia and Paranoid Psychoses among College Students, 443, Jan. '44.  
 Richter, Helen G.; Emotional Disturbances following Upper Respiratory Infection in Children, 387, Nov. '43.  
 Riess, Bernard F., and Berman, Louis; The Mechanism of the Insulin Effect on Abnormal Behavior, 674, Mar. '44.  
 Romano, John: *See* Rosenbaum, Milton, jt. auth.  
 Rome, Howard P.; Psychiatry as Seen in the Advanced Mobile Base Hospitals, 85, July '43.  
 Roseman, E.: *See* Davis, E. W., jt. auth.  
 Rosenbaum, Milton, and Romano, John; Psychiatric Casualties among Defense Workers, 314, Nov. '43.  
 Rostow, Edna G.: *See* Fry, Clements, C., jt. auth.  
 Roth, Nathan; Psychoses in Patients with Edema, 397, Nov. '43.  
 Rothschild, David; The Role of the Premorbid Personality in Arteriosclerotic Psychoses, 501, Jan. '44.  
 Ruesch, Jurgen; Intellectual Impairment in Head Injuries, 480, Jan. '44.  
 Ruggles, Arthur H.; Clifford Beers and American Psychiatry; (Cent.): 98, Apr. '44.

- Ruggles, Arthur H.; Presidential Address, (1943) "Wartime Psychiatry," 1, July '43.  
 Russell, William L.; From Asylum to Hospital A Transition Period; (Cent.): 87, Apr. '44.  
 Ryan, W. Carson; History of Mental Hygiene in the Schools; (Cent.): 144, Apr. '44.  
 Rymer, Charles A.; Psychiatric Education, 561, Jan. '44.  
 Rymer, Charles A., and Ebaugh, Franklin G.; Experiment in Postgraduate Education, 752, May '44.

## S

- Saul, Leon J.; Some Aspects of Psychiatry in the Training Station, 74, July '43.  
 Sheps, J. G.; *See* Waggoner, R. W., jt. auth.  
 Sherman, Stephen; A System of Combined Individual and Group Therapy as used in the Medical Program for Merchant Seamen, 127, July '43.  
 Simon, John L.; The Myokinetic Psychodiagnosis of Dr. Emilio Mira, 334, Nov. '43.  
 Small, S. M., and Milhorat, A. T.; Anorexia Nervosa: Metabolism and its Relation to Psychopathologic Reactions, 681, Mar. '44.  
 Smith, E. Rogers; Neuroses Resulting from Combat, 94, July '43.  
 Smith, Lauren H., Hastings, Donald W., and Hughes, Joseph; Immediate and Follow-Up Results of Electroshock Therapy, 351, Nov. '43.  
 Smith, Olive Cushing; *See* Blank, H. Robert, jt. auth.  
 Solomon, Harry C.; *See* Bowman, Karl M., jt. auth.  
 Solomon, Maida H.; *See* Stevenson, George S., jt. auth.  
 Sommer, Conrad, and Weinberg, Jack; Techniques and Factors Reversing the Trend of Population Growth in Illinois State Hospitals, 456, Jan. '44.  
 Sprague, George S.; Etiology of Mental Disease, A Changing Concept, 795, May '44.  
 Steinberg, D. Louis; *See* Wittman, Mary Phyllis, jt. auth.  
 Stevenson, G. H.; International Psychiatry in the Post-War World, 529, Jan. '44.  
 Stevenson, George S.; The Development of Extramural Psychiatry in the United States; (Cent.): 147, Apr. '44.  
 Stevenson, George S., Corcoran, Mary E., Wade, Beatrice, and Solomon, Maida H.; Extramural Psychiatry and the Affiliated Services, 553, Jan. '44.  
 Straus, Walter; One Case of Calcified Pericarditis and Two Cases with a History of Severe Coronary Pathology under Insulin and Electric Shock Therapy, 416, Nov. '43.  
 Strauss, Alfred A.; Ways of Thinking in Brain-Crippled Deficient Children, 639, Mar. '44.  
 Strecker, Edward A.; Psychoanalytic Perspectives, 516, Jan. '44.  
 Strecker, Edward A.; The Leaven of Psychiatry in War and in Peace (President's Message); (Cent.): 1, Apr. '44.  
 Sugar, Carl; *See* Apfelberg, Benjamin, jt. auth.

## T

- Thom, Douglas A.; Sociological Changes Predisposing toward Juvenile Delinquency, 452, Jan. '44.  
 Thorne, Frederick C.; The Incidence of Nocturnal Enuresis after Age Five; 686, Mar. '44.  
 Tiebout, Harry M.; Therapeutic Mechanisms of Alcoholics Anonymous, 468, Jan. '44.  
 Tietze, Christian; A Note on the Incidence of Mental Disease in the State of New York, 402, Nov. '43.  
 Tucker, Beverley Randolph; Silas Weir Mitchell, 1829-1914; (Cent.): 80, Apr. '44.

## W

- Wade, Beatrice; *See* Stevenson, George S., jt. auth.  
 Waggoner, R. W., and Sheps, J. G.; Frequency of Convulsive Disorders in Feeble-minded, 497, Jan. '44.  
 Wall, James H., and Allen, Edward B.; Results of Hospital Treatment of Alcoholism, 474, Jan. '44.  
 Wegner, Walter R.; *See* Gibbs, Frederic A., jt. auth.  
 Weinberg, Jack; *See* Sommer, Conrad, jt. auth.  
 Wells, F. L.; Psychometrics, 565, Jan. '44.  
 Whitehorn, John C.; Biochemistry, Endocrinology and Neuropathology, 550, Jan. '44.  
 Wiggins, E. J., and Lyman, R. S.; Manic Psychosis in a Negro, 781, May '44.  
 Wilcox, Paul H.; The Electroshock Convulsion Syndrome, 668, Mar. '44.  
 Wiley, E. David; *See* Pollock, Horatio M., jt. auth.  
 Wittels, Fritz; Freud's Scientific Cradle, 521, Jan. '44.  
 Wittman, Mary Phyllis, and Steinberg, D. Louis; A Study of Prodromal Factors in Mental Illness with Special Reference to Schizophrenia, 811, May '44.  
 Wortis, Joseph; *See* Bowman, Karl M., jt. auth.  
 Wortis, Joseph; *See* Overholser, Winfred, jt. auth.  
 Wortis, S. Bernard; *See* Impastato, David J., jt. auth.

## Y

- Yarrell, Zuleika; *See* Hitschman, Margaret, jt. auth.  
 Yerbury, Edgar C., and Newell, Nancy; Genetic and Environmental Factors in Psychoses of Children, 599, Mar. '44.

## Z

- Ziegler, Lloyd H.; Bilateral Prefrontal Lobotomy, 178, Sept. '44.  
 Zilboorg, Gregory; Historical Sidelights on the Problem of Delinquency, 757, May '44.

May

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